Roland®

V-Synth

OWNER'S MANUAL

Thank you, and congratulations on your choice of the Roland V-Synth.

Before using this unit, carefully read the sections entitled: "IMPORTANT SAFETY INSTRUCTIONS" (Owner's Manual p. 2), "USING THE UNIT SAFELY" (Owner's Manual p. 3), and "IMPORTANT NOTES" (Owner's Manual p. 4). These sections provide important information concerning the proper operation of the unit. Additionally, in order to feel assured that you have gained a good grasp of every feature provided by your new unit, the Quick Start, Owner's Manual, and Sound List should be read in their entirety. These manuals should be saved and kept on hand as a convenient reference.

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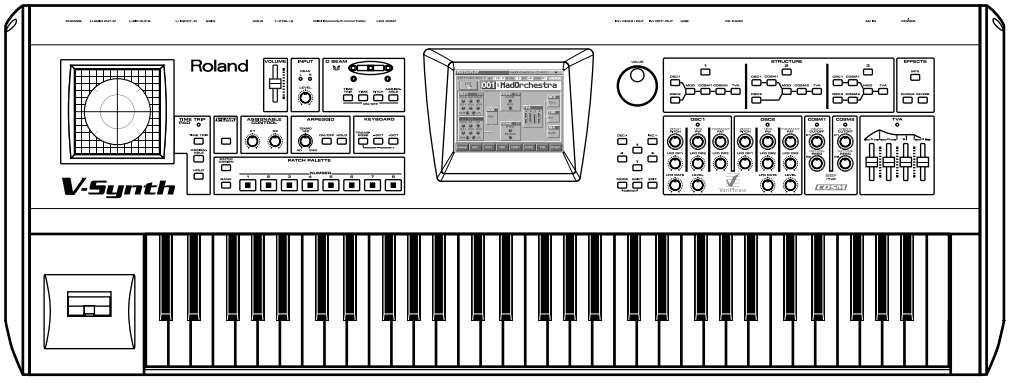

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CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

ATTENTION: RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS.

IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS

WARNING - When using electric products, basic precautions should always be followed, including the following:

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any of the ventilation openings. Install in accordance with the manufacturers instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Never use with a cart, stand, tripod, bracket, or table except as specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

For the U.K.

WARNING: THIS APPARATUS MUST BE EARTHED
IMPORTANT: THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.
GREEN-AND-YELLOW: EARTH, BLUE: NEUTRAL, BROWN: LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured GREEN-AND-YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol ⏚ or coloured GREEN or GREEN-AND-YELLOW.

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

USING THE UNIT SAFELY

INSTRUCTIONS FOR THE PREVENTION OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

About ⚠WARNING and ⚠CAUTION Notices

⚠WARNING	Used for instructions intended to alert the user to the risk of death or severe injury should the unit be used improperly.
⚠CAUTION	Used for instructions intended to alert the user to the risk of injury or material damage should the unit be used improperly. * Material damage refers to damage or other adverse effects caused with respect to the home and all its furnishings, as well to domestic animals or pets.

About the Symbols

⚠	The △ symbol alerts the user to important instructions or warnings.The specific meaning of the symbol is determined by the design contained within the triangle. In the case of the symbol at left, it is used for general cautions, warnings, or alerts to danger.
	The ⃠ symbol alerts the user to items that must never be carried out (are forbidden). The specific thing that must not be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the unit must never be disassembled.
	The ● symbol alerts the user to things that must be carried out. The specific thing that must be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the power-cord plug must be unplugged from the outlet.

ALWAYS OBSERVE THE FOLLOWING

⚠WARNING

- Before using this unit, make sure to read the instructions below, and the Owner's Manual.
- Do not open or perform any internal modifications on the unit.
- Do not attempt to repair the unit, or replace parts within it (except when this manual provides specific instructions directing you to do so). Refer all servicing to your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page.
- Never use or store the unit in places that are:
  - Subject to temperature extremes (e.g., direct sunlight in an enclosed vehicle, near a heating duct, on top of heat-generating equipment); or are
  - Damp (e.g., baths, washrooms, on wet floors); or are
  - Humid; or are
  - Exposed to rain; or are
  - Dusty; or are
  - Subject to high levels of vibration.
- This unit should be used only with a rack or stand that is recommended by Roland.
- When using the unit with a rack or stand recommended by Roland, the rack or stand must be carefully placed so it is level and sure to remain stable. If not using a rack or stand, you still need to make sure that any location you choose for placing the unit provides a level surface that will properly support the unit, and keep it from wobbling.
- The unit should be connected to a power supply only of the type described in the operating instructions, or as marked on the unit.

⚠WARNING

- Use only the attached power-supply cord.
- Do not excessively twist or bend the power cord, nor place heavy objects on it. Doing so can damage the cord, producing severed elements and short circuits. Damaged cords are fire and shock hazards!
- This unit, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level, or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should immediately stop using the unit, and consult an audiologist.
- Do not allow any objects (e.g., flammable material, coins, pins); or liquids of any kind (water, soft drinks, etc.) to penetrate the unit.
- In households with small children, an adult should provide supervision until the child is capable of following all the rules essential for the safe operation of the unit.
- Protect the unit from strong impact.
  (Do not drop it!)
- Do not force the unit's power-supply cord to share an outlet with an unreasonable number of other devices. Be especially careful when using extension cords—the total power used by all devices you have connected to the extension cord's outlet must never exceed the power rating (watts / amperes) for the extension cord. Excessive loads can cause the insulation on the cord to heat up and eventually melt through.

USING THE UNIT SAFELY

⚠ WARNING

- Before using the unit in a foreign country, consult with your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page.

- DO NOT play a CD-ROM disc on a conventional audio CD player. The resulting sound may be of a level that could cause permanent hearing loss. Damage to speakers or other system components may result.

⚠ CAUTION

- The unit should be located so that its location or position does not interfere with its proper ventilation.

- This unit for use only with Roland keyboard stand KS-12. Use with other stands is capable of resulting in instability causing possible injury.

- Always grasp only the plug on the power-supply cord when plugging into, or unplugging from, an outlet or this unit.

⚠ CAUTION

- Try to prevent cords and cables from becoming entangled. Also, all cords and cables should be placed so they are out of the reach of children.

- Never climb on top of, nor place heavy objects on the unit.

- Never handle the power cord or its plugs with wet hands when plugging into, or unplugging from, an outlet or this unit.

- Before moving the unit, disconnect the power plug from the outlet, and pull out all cords from external devices.

- Before cleaning the unit, turn off the power and unplug the power cord from the outlet (Quick Start; p. 31).

- Whenever you suspect the possibility of lightning in your area, pull the plug on the power cord out of the outlet.

- Should you remove screws, make sure to put them in a safe place out of children's reach, so there is no chance of them being swallowed accidentally.

IMPORTANT NOTES

In addition to the items listed under "IMPORTANT SAFETY INSTRUCTIONS" and "USING THE UNIT SAFELY" on pages 2–4, please read and observe the following:

Power Supply

- Do not use this unit on the same power circuit with any device that will generate line noise (such as an electric motor or variable lighting system).
- Before connecting this unit to other devices, turn off the power to all units. This will help prevent malfunctions and/or damage to speakers or other devices.

Placement

- Using the unit near power amplifiers (or other equipment containing large power transformers) may induce hum. To alleviate the problem, change the orientation of this unit; or move it farther away from the source of interference.
- This device may interfere with radio and television reception. Do not use this device in the vicinity of such receivers.
- Noise may be produced if wireless communications devices, such as cell phones, are operated in the vicinity of this unit. Such noise could occur when receiving or initiating a call, or while conversing. Should you experience such problems, you should relocate such wireless devices so they are at a greater distance from this unit, or switch them off.
- Do not expose the unit to direct sunlight, place it near devices that radiate heat, leave it inside an enclosed vehicle, or otherwise subject it to temperature extremes. Excessive heat can deform or discolor the unit.
- When moved from one location to another where the temperature and/or humidity is very different, water droplets (condensation) may form inside the unit. Damage or malfunction may result if you attempt to use the unit in this condition. Therefore, before using the unit, you must allow it to stand for several hours, until the condensation has completely evaporated.
- Do not allow objects to remain on top of the keyboard. This can be the cause of malfunction, such as keys ceasing to produce sound.

Maintenance

- For everyday cleaning wipe the unit with a soft, dry cloth or one that has been slightly dampened with water. To remove stubborn dirt, use a cloth impregnated with a mild, non-abrasive detergent. Afterwards, be sure to wipe the unit thoroughly with a soft, dry cloth.
- Never use benzine, thinners, alcohol or solvents of any kind, to avoid the possibility of discoloration and/or deformation.

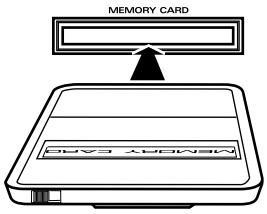
Additional Precautions

- Please be aware that the contents of memory can be irretrievably lost as a result of a malfunction, or the improper operation of the unit. To protect yourself against the risk of loosing important data, we recommend that you periodically save a backup copy of important data you have stored in the unit's memory on a PC card.
- Unfortunately, it may be impossible to restore the contents of data that was stored on a PC card once it has been lost. Roland Corporation assumes no liability concerning such loss of data.
- Use a reasonable amount of care when using the unit's buttons, sliders, or other controls; and when using its jacks and connectors. Rough handling can lead to malfunctions.
- Never strike or apply strong pressure to the display.
- When connecting / disconnecting all cables, grasp the connector itself—never pull on the cable. This way you will avoid causing shorts, or damage to the cable's internal elements.
- A small amount of heat will radiate from the unit during normal operation.
- To avoid disturbing your neighbors, try to keep the unit's volume at reasonable levels. You may prefer to use headphones, so you do not need to be concerned about those around you (especially when it is late at night).
- When you need to transport the unit, package it in the box (including padding) that it came in, if possible. Otherwise, you will need to use equivalent packaging materials.
- Use only the specified expression pedal (EV-**; sold separately). By connecting any other expression pedals, you risk causing malfunction and/or damage to the unit.
- Use a cable from Roland to make the connection. If using some other make of connection cable, please note the following precautions.
  - Some connection cables contain resistors. Do not use cables that incorporate resistors for connecting to this unit. The use of such cables can cause the sound level to be extremely low, or impossible to hear. For information on cable specifications, contact the manufacturer of the cable.

Before Using Cards

Using DATA Cards

- Carefully insert the DATA card all the way in—until it is firmly in place.



- Never touch the terminals of the DATA card. Also, avoid getting the terminals dirty.

Handling CD-ROMs

- Avoid touching or scratching the shiny underside (encoded surface) of the disc. Damaged or dirty CD-ROM discs may not be read properly. Keep your discs clean using a commercially available CD cleaner.

Copyright

- Unauthorized recording, distribution, sale, lending, public performance, broadcasting, or the like, in whole or in part, of a work (musical composition, video, broadcast, public performance, or the like) whose copyright is held by a third party is prohibited by law.
- When exchanging audio signals through a digital connection with an external instrument, this unit can perform recording without being subjected to some of the restrictions of the Serial Copy Management System (SCMS). This is because the unit is intended solely for musical production, and is designed not to be subject to restrictions as long as it is used to record works (such as your own compositions) that do not infringe on the copyrights of others. (SCMS is a feature that prohibits second-generation and later copying through a digital connection. It is built into MD recorders and other consumer digital-audio equipment as a copyright-protection feature.)
- Do not use this unit for purposes that could infringe on a copyright held by a third party. We assume no responsibility whatsoever with regard to any infringements of third-party copyrights arising through your use of this unit.

How To Use This Manual

This owner's manual is organized as follows. Before you start reading it, we'd like to suggest going through the Quick Start manual. For details on all the patches and waves that the V-Synth contains, refer to the separate "Sound List."

Overview of the V-Synth

This explains the structure of the V-Synth, and basic operation. Reading it is essential for understanding V-Synth operational procedures.

Playing in Patch Mode

This explains how to play the V-Synth in Patch mode. Reading it is essential for understanding V-Synth operational procedures.

Creating a Patch

This chapter explains how to create patches, and describes what the patch parameters do and how they are composed. Read this chapter when you wish to create patches.

Creating and Editing Samples (Sample Mode)

This explains how to sample, and how to edit and encode samples. Read this when you want to sample sounds.

Settings Common to All Modes (System Mode)

This chapter describes how the System parameters that determine the V-Synth's operation environment work and how these parameters are organized. Read it as necessary.

Disk-Related Functions (Disk Mode)

This chapter covers disk-related operations such as saving data to disk and loading data from disk. Read it as necessary.

Transferring Data (USB Mode)

This explains how to connect the V-Synth to your computer, and transfer data such as patches and waves. Read this as necessary.

Other Functions

This explains how to transmit data to an external MIDI device (Data Transfer), and how to restore all data of the V-Synth to the factory settings (Factory Reset). Read it as necessary.

Appendices

This chapter contains a troubleshooting section for use when the V-Synth is not functioning as expected. There is also a list of messages that you can refer to if an message appears on the display. A list of parameters and a MIDI implementation chart are also provided.

Notation Used in This Owner's Manual

To make operation procedures easy to understand, the following notation system is adopted:

Characters and graphics in square brackets [ ] indicate buttons and knobs on the front panel. For example, [MODE] indicates the MODE button, and [▲], [▼], [◄], and [►] indicates the cursor buttons.

Text or graphics enclosed in < > indicate objects in the screen (touch screen) that can be touched using your finger. The manual will instruct you to "touch" the object shown in the touch screen.

(p. **) refers to pages within the manual.

Below are the meanings of the symbols preceding certain sentences in the text.

NOTE
These are notes. Be sure to read them.

MEMO
These are reference memos. Read it as necessary.

HINT
These are hints for operating the V-Synth. Read it as necessary.

These provide information from related reference pages. Read it as necessary.

NOTE
The display screens printed in this owner's manual are based on the factory settings. However, please be aware that in some cases they may differ from the actual factory settings.

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Main Features

With this synthesizer, every component involved in sound creation has been taken to the next stage of evolution

The V-Synth brings together the ideal combination of sound generators, together with an interface that dynamically links your sensitivities with the sound. It's a powerful synthesizer that only Roland could have produced. The sounds of the V-Synth have a living character that goes beyond the limits of previous synthesizers.

■ The ideal combination of sound generators

● Flexible sound generator structure

The sound generator section consists of OSC, MOD, COSM, and TVA blocks, and allows you to flexibly change the way in which these blocks are connected. Sections other than the TVA provide multiple types, and can be combined freely.

Since each section can be switched on / off in real time from the panel, it's always easy to understand how the sound is structured.

● Versatile oscillators using VariPhrase technology

Since the oscillators have independent envelopes and LFOs, they themselves have the functionality of synthesizers. You can choose from three types: analog, PCM, and external input.

For example, since the PCM oscillators provide VariPhrase functionality, you can change the waveform playback speed in the forward or reverse directions.

Approximately 300 different preset waveforms are built-in. In addition, you can use waveforms that you sampled from the analog or digital input.

The powerful analog modeling sound generator creates a waveform by internal calculation, and is great for creating unique tonal changes, such as adding fatness or more of an edge to your sound.

● COSM processing for creating unique sounds

The COSM section uses a rich variety of processing in addition to the usual TVF to vary the sound in extreme ways. For example, you can use a sideband filter to give a metallic resonance to simple white noise. You can use a resonator to add the body resonances of a musical instrument. Processes such as wave shaper and guitar amp modeling are also provided.

Since these effects are independent for each voice, you can play chords while preserving the sense of pitch.

● Carefully selected effects

Three types of carefully selected effects are built-in: MFX (multi-effects), chorus, and reverb.

Also included is a newly developed Pseudo Stereo effect that adds a sense of stereo to monaural sample data, allowing you to create a variety of sound fields.

■ An interface that gives life to the sound

● Intuitive user interface

The V-Synth provides a rich variety of controllers for hands-on operation, which puts you in direct and intuitive control of the sound: a touch-operated display, the Time Trip pad, twin D Beam controllers that detect not only up / down but also left / right movement, and highly sensitive knobs.

Most of the sound generator parameters can be assigned to these controllers for direct control.

● Powerful time-control functions

The VariPhrase sound generator of the V-Synth provides a Time Trip function that can bring the waveform playback to a stop in real time, and trace backward or forward from that point.

In addition, VariPhrase waveforms, LFO, envelope, arpeggiator, and effects can all be made to operate in synchronization at the same tempo. For example, a waveform with movement such as a rhythm loop can easily be synthesized in units of individual notes. Of course you can also synchronize to MIDI Clock messages from an external device.

The arpeggiator lets you program a pattern for each sound, and also supports control changes.

● New specially optimized preset sounds

The new built-in sounds created specifically for the V-Synth give you a wide range of expression simply when played from the keyboard, and are also optimized for performance from the Time Trip pad and D Beam controllers.

From the day you start playing the V-Synth, you can start taking advantage of the performance potential offered by its Time Trip pad and D Beam controllers.

■ Use with other devices for even greater possibilities

● Open system architecture

The V-Synth lets you customize all patches and wave data. By connecting your computer via USB, you can easily back up all of your data.

In addition to being able to sample using the V-Synth itself, you can also import WAV or AIFF format files, so audio data created on other devices can easily be loaded into the V-Synth and used.

Furthermore, you can store data on PC cards for easy exchange of sound data.

● A full complement of external interfaces

The digital audio interface supports both optical and coaxial connections, and sampling rates of 44.1 kHz, 48 kHz, and 96 kHz, making the V-Synth ideal for any digital music production environment.

The USB connector supports file transfer or MIDI communication, and you can select its function depending on your needs.

The PC card slot makes it easy to store large amounts of data on commercially available media such as Compact Flash or SmartMedia via a PC card adaptor.

● V-LINK function

V-LINK is a function that links music and video performance. By using a video device that supports V-LINK, you can easily link various video effects with your performances.

If the V-Synth is connected to an Edirol DV-7PR, you can use the V-Synth's controllers to adjust the brightness or color of the image, vary the playback speed, or switch between images.

What is VariPhrase?

VariPhrase has the following advantages:

1. Capable of changing the pitch, rate of time expansion / compression and voice characteristics (formant) on a real-time basis.
2. Allows easy synchronization to tempo and pitch.
3. A single sample covers an extended range of keys compared to conventional digital samplers.
4. Retains sound quality, while implementing the above three advantages.

VariPhrase overcomes many problems that conventional samplers and digital recorders have with audio phrases.

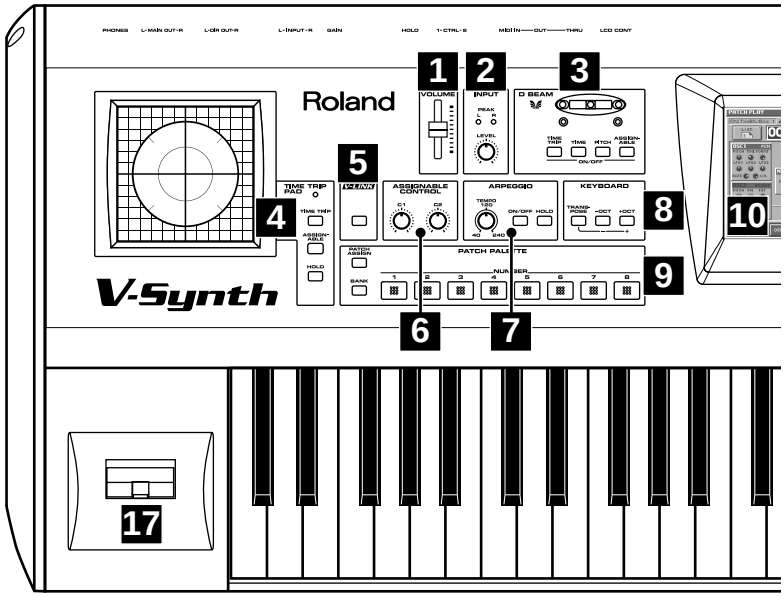
Typical issues with Digital Samplers and Digital recorders

- Changing tempo affects Pitch.
- Changing the pitch of phrases affects tempo and formant of the sound.
- Limited control of audio phrases. You cannot adjust a partial section of a sound in real-time.
- Most samplers require multiple samples over limited key ranges for realistic playback of a sound.
- Samples of the same tempo must be available for performing chords, otherwise the notes of the chord will be out of sync.
- Pitch or tempo changes on Digital samplers tends to degrade audio quality.

VariPhrase solves all of these problems.

Panel Descriptions

Front Panel



1

Volume Slider

Adjusts the overall volume that is output from the rear panel MAIN OUT jacks and PHONES jack.→ (Quick Start; p. 4)

2 INPUT

[PEAK] (Peak Indicator)

This will light when the input volume is too high.

[LEVEL]

Adjusts the volume of the signal input through the INPUT jacks on the rear panel. → (p. 57)

3 D BEAM

You can apply a variety of effects to sounds simply by moving your hand. → (p. 29)

Indicators (L, R)

If the D Beam controller is on, these will light when you move your hand over the controller.

[ON / OFF] (TIME TRIP, TIME, PITCH, ASSIGNABLE)

Switches the D Beam controller on / off. The effect to be controlled can be selected by pressing the relevant button.

TIME TRIP: Apply the Time Trip effect.

TIME: Apply the Time Control effect.

PITCH: Apply the Pitch Control effect.

ASSIGNABLE: Apply the effect that is specified for each sound.

4 TIME TRIP PAD

By touching the pad surface with your finger you can apply a variety of effects to the sound.

Indicator

This will light when you touch the Time Trip Pad.

[TIME TRIP]

Switches to the Time Trip effect.

[ASSIGNABLE]

Switches to the effect that is specified for each patch.

[HOLD]

Switches hold on / off for the effect controlled by the Time Trip pad.

5 V-LINK

Enables or disables control of an externally connected V-LINK device.

6 ASSIGNABLE CONTROL

You can assign a variety of parameters and functions to the two knobs ([C1], [C2]), and use them to modify the sound in realtime. → (p. 30)

7 ARPEGGIO

Here you can control the arpeggiator.

[TEMPO]

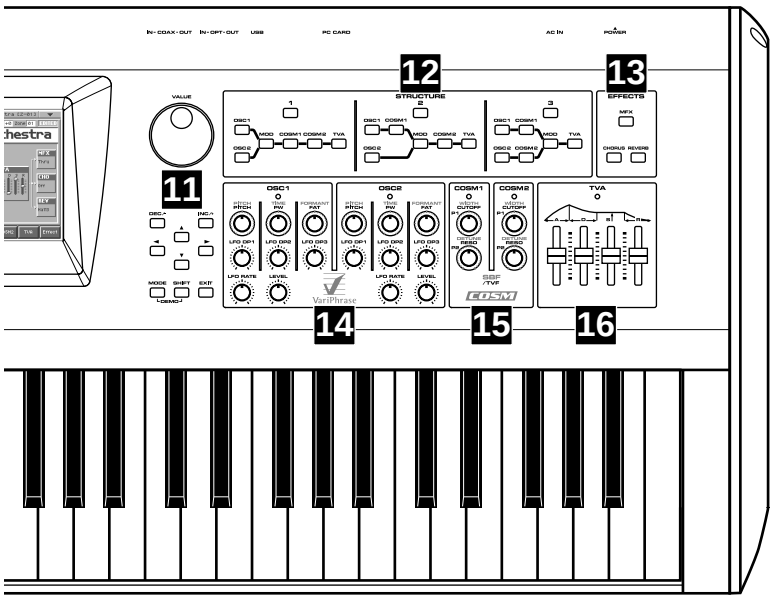
Adjusts the tempo of the arpeggios.

[ON / OFF]

Switches the Arpeggiator on / off.

[HOLD]

Switches the Arpeggiator hold on / off.



8 KEYBOARD

Here you can change the pitch range of the keyboard.

[TRANSPOSE]

Specifies transposing the keyboard in semitone steps. → (p. 22)

Pressing this button while holding down [-OCT] or [+OCT] allows you to set the desired amount of transposition.

[-OCT], [+OCT]

These buttons adjust the pitch of the keyboard in octave steps. → (p. 23)

9 PATCH PALETTE

Here you can register and recall your favorite patches.

[NUMBER] (1–8)

These buttons let you select / register your favorite patches.

[BANK]

You can change the Patch Palette bank by holding down this button and pressing [NUMBER] (1–8)

[PATCH ASSIGN]

You can register the currently selected patch as a favorite patch by holding down this button and pressing [NUMBER] (1–8).

10

Display

This displays information regarding the operation you are performing.

11

VALUE Dial

This is used to modify values. If you hold down [SHIFT] as you turn the VALUE dial, the value will change in greater increments. → (p. 20)

[DEC/-], [INC/+]

This is used to modify values. If you keep on holding down one button while pressing the other, the value change accelerates. If you press one of these buttons while holding down [SHIFT], the value will change in bigger increments. → (p. 20)

[▲], [▼], [◄], [►] (Cursor Buttons)

Moves the cursor location up / down / left / right. → (p. 20)

[MODE]

Opens the Mode Menu window.

[SHIFT]

This button is used in conjunction with other buttons to execute various functions.

[EXIT]

Return to the PLAY screen, or close the currently open window. In some screens, this causes the currently executing function to be aborted.

12 STRUCTURE

Here you can turn each sound-producing element (section) on or off.

[1], [2], [3]

Switches the structure type (the way in which the sections are connected).

[OSC1], [OSC2], [MOD], [COSM1], [COSM2], [TVA]

These buttons switch the corresponding section on / off.

Only the buttons of the structure type selected by [1], [2], or [3] are active.

13 EFFECTS

Here you can switch the onboard effects (multi-effects, chorus, reverb) on / off. When an effect is on, the indicator for its button will light.

[MFX]

Switches multi-effects on and off.

[CHORUS]

Switches chorus on and off.

[REVERB]

Switches reverb on and off.

14 OSC1, OSC2

Here you can adjust the oscillator section.
These knobs are active if the oscillator is on (indicator lit). The result of adjusting these knob will depend on the oscillator type that is selected.

[PITCH]

This modifies the pitch.

[TIME] / [PW]

TIME: This modifies the time.
PW: This modifies the pulse width.

[FORMANT] / [FAT]

FORMANT: This modifies the formant.
FAT: Adjusts the fatness of the sound when using an analog oscillator.

[LFO DP1], [LFO DP2], [LFO DP3]

These knobs adjust the depth of the LFO that is applied to the parameters of the knobs located above each knob.

[LFO RATE]

This modifies the LFO rate.

[LEVEL]

This modifies the volume.

15 COSM1, COSM2

Here you can adjust the COSM sections.
These knobs are active when COSM is on (indicator lit). The result of adjusting these knobs will depend on the COSM type that is selected.

[WIDTH] / [CUTOFF] / [P1]

WIDTH: Adjusts the width when SBF (Side Band Filter) is selected.
CUTOFF: Adjusts the cutoff frequency when TVF is selected.
P1: Adjusts the parameter specified for the type when other types are selected.

[DETUNE] / [RESO] / [P2]

DETUNE: Adjusts the detune when SBF (Side Band Filter) is selected.
RESO: Adjusts the resonance when TVF is selected.
P2: Adjusts the parameter specified for the type when other types are selected.

16 TVA

Here you can adjust the TVA section.
These sliders are active when the TVA is on (indicator lit).

[A]

This modifies the Attack Time.

[D]

This modifies the Decay Time.

[S]

This modifies the Sustain Level.

[R]

This modifies the Release Time.

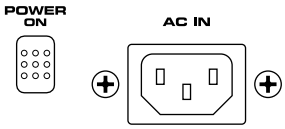
MEMO

You can also use these sliders to make envelope settings in the envelope setting screens of other sections.

17 Pitch Bend / Modulation Lever

This allows you to control pitch bend or apply vibrato.
→ (Quick Start; p. 17)

Rear Panel

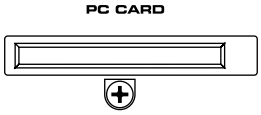


POWER Switch

Press to turn the power on/off. → (Quick Start; p. 4)

AC Inlet

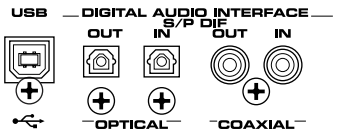
Connect the included power cord to this inlet. → (Quick Start; p. 3)



PC CARD Slot

A PC card can be inserted here.

For details on installing the included PC card protector, refer to p. 178.



USB Connector

This is a USB connector. You can connect it to your personal computer to send or receive files and MIDI messages.

DIGITAL AUDIO INTERFACE Connector (OPTICAL IN/OUT, COAXIAL IN/OUT)

(conforming to S/P DIF).

These connectors input/output a digital audio signal (stereo). The output signal is identical to the signal that is output from the MAIN OUT jacks.

MEMO

S/P DIF is a digital interface format used for consumer digital audio devices.

LCD CONTRAST Knob

Adjusts the display contrast. → (Quick Start; p. 5)

MIDI Connectors (IN, OUT, THRU)

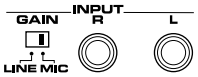
These connectors can be connected to other MIDI devices to receive and transmit MIDI messages.

CTRL 1, CTLR 2 PEDAL Jack

You can connect optional expression pedals (EV-5, etc.) to these jacks. By assigning a desired function to a pedal, you can use it to select or modify sound or perform various other control.
→ (p. 79, Quick Start; p. 18)

HOLD PEDAL Jack

An optional pedal switch (DP series) can be connected to this jack for use as a hold pedal. → (Quick Start; p. 18)



INPUT Jacks (L, R)

An external audio source such as a CD player can be connected to these jacks for sampling or external input.

GAIN Switch

This selects the input gain of the INPUT jacks.

Set this to the “MIC” position if connecting a mic, or to the “LINE” position if connecting any other type of device.

DIRECT OUT Jacks (L, R)

This jack is a stereo output of the sound unprocessed by onboard effects. An external effects processor or other devices can be connected to these jacks.

MAIN OUT Jacks (L (MONO), R)

These jacks output the audio signal to the connected mixer/amplifier system in stereo. For mono output, use the L jack.
→ (Quick Start; p. 3)

PHONES Jack

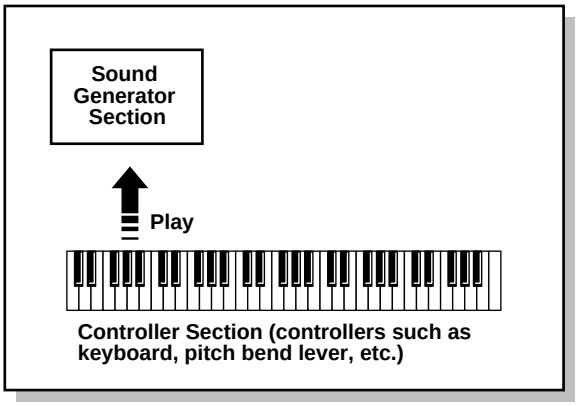
This is the jack for connecting headphones (sold separately).
→ (Quick Start; p. 3)

Overview of the V-Synth

How the V-Synth Is Organized

Basic Structure

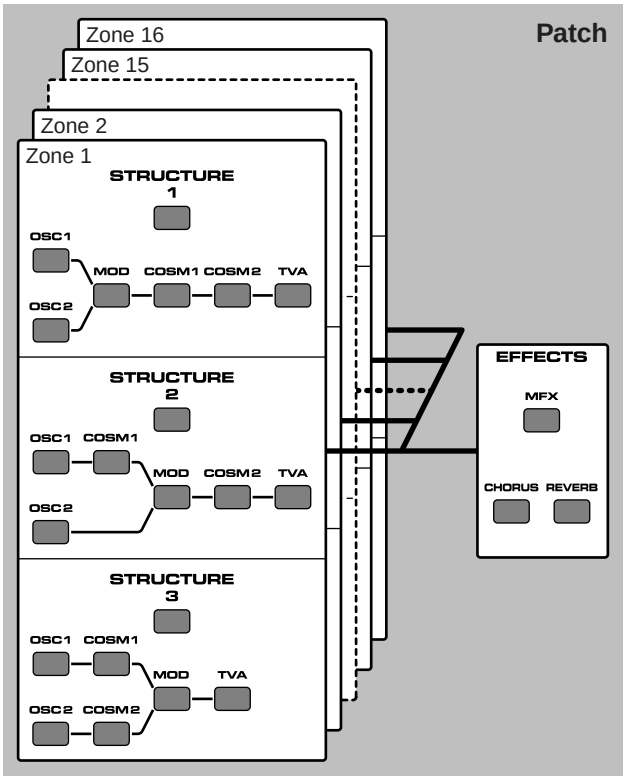
Broadly speaking, the V-Synth consists of a **controller section** and a **sound generator section**.



The right side of the V-Synth's front panel is where the controls for the Sound Generator section are located. The controls on the left side are mainly those of the Controller section.

Sound Generator Section

The sounds you play on the V-Synth are called **patches**. Each patch consists of a **structure** (an arrangement of its six sections), **zones** (which allow for sixteen individual setups for sixteen key ranges), and three **effects**.



Section name	Function
OSC1, OSC2	This section generates the sound on which a patch is based. The sound is produced either by built-in preset waves or sampled waves, or by calculating an analog modeling waveform. An external audio input source can also be used.
MOD	This section mixes and modulates the two audio signals.
COSM1, COSM2	This section applies a wide variety of processing including filtering. This differs from the effects in that effects are applied to the final mix of the sound, COSM is applied to each individual note.
TVA	This section creates time-variant changes in volume, and sets the pan position.

Effects	function
MFX	The multi-effects are multi-purpose effects that can completely change the nature of the patch's sound. There are 41 different effects types; select and use the type that suits your aims.
CHORUS	Applies a chorus effect to give the sound depth and spaciousness.
REVERB	Applies a reverb effect to add ambience to the sound.

Controller Section

The controller section consists of the keyboard, pitch bend / modulation lever, time trip pad, D Beam controller, C1 / C2 knobs, arpeggiator, and pedals connected to the rear panel. When you manipulate these controllers, they send performance data to the sound generator section, causing the V-Synth to create sound.

Polyphony

The maximum polyphony of the V-Synth depends on the OSC and COSM types used by the patch.

MEMO

Changing the effect type or switching effects on / off does not affect the available polyphony.

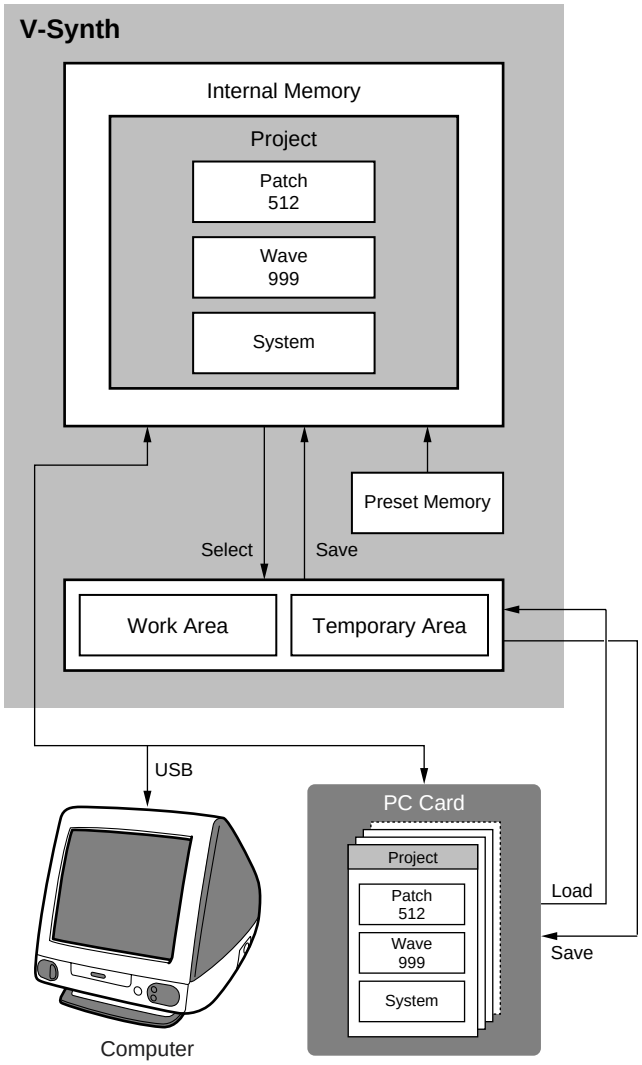
About Multitimbral Performance

The V-Synth allows up to 16-part multitimbral operation, and can be played multitimbrally by performance data sent from an external device. You can use the V-Synth to play the sounds of a song you created on your sequencer, or as part of an ensemble. From the keyboard you can play only the patch that is assigned to part 1. The PATCH Information window shows you the patch that is assigned to each part (p. 98).

A sound module that allows you to control multiple sounds independently in this way is called a **multitimbral sound module**.

Memory

Memory Structure



Project

The largest unit of memory used by the V-Synth is the **project**. A project contains up to 512 patches, up to 999 waves, and various system settings.

The V-Synth uses one project at a time.

Internal Memory

The V-Synth has **internal memory** that stores a project. When the V-Synth is shipped from the factory, this memory already contains patch and wave data, but you are free to overwrite any of this. You can always restore the memory to the factory-set contents (Factory Reset).

Work Area/Temporary Area

When you turn on the power of the V-Synth, or when you load a project in Disk mode, the project data is placed in temporary memory called the **work area**.

Sampling and sample editing operations modify the data that is in the work area.

The currently playable patch data is then further placed (from the work area) into a location called the **temporary area**. This means that even after editing a patch, you can return to the unedited condition by once again recalling that patch.

Since sample data and patch data that you edit will disappear if you simply turn off the power, you must **save** (SAVE / WRITE) it if you want to keep your changes.

PC Cards

Internal memory can hold only one project, but you can use commercially available PC cards to store additional projects.

Sampling Memory

The amount of memory you can use for sampling will depend on the state of the project that is currently loaded into the work area. With the factory-set project, there is approximately 115 seconds (stereo) / 230 seconds (monaural) of sampling memory. If you delete the factory-set waves, you will be able to use a maximum of approximately 280 seconds (stereo) / 560 seconds (monaural) of sampling memory. However since a maximum of approximately 56 seconds (stereo) / 113 seconds (monaural) can be saved in internal memory, you will need to use a commercially available PC card if you want to store more samples than this.

* *The above values are for when the sample is encoded using the "LITE" type.*

MEMO

The factory-set waves can be restored using the Factory Reset operation (p. 98) even if they have been erased.

Preset Memory

Preset memory contains the state of the internal memory when the unit is shipped from the factory. If, after erasing the internal memory, you once again want to use the factory-set patches or waves, you can either perform the Factory Reset operation or use Disk mode to import the factory data from preset memory.

USB

If you connect the V-Synth to your computer via a USB cable, projects, patches, and wave data in the V-Synth's internal memory or on a PC card can be saved (backed up) to the hard disk or other media on your computer.

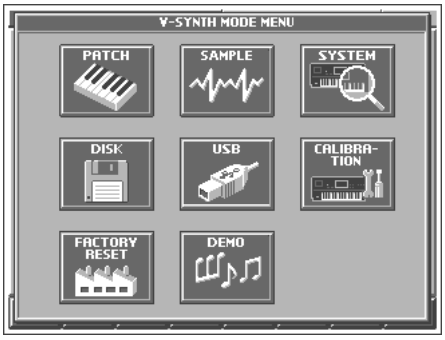
In addition, wave data created on the V-Synth can also be used by software running on your computer, or wave data created by your computer software can be used on the V-Synth.

Basic Operation of the V-Synth

Changing Operating Modes ([MODE])

The V-Synth has eight operating modes: Patch mode, Sample mode, System mode, Disk mode, USB mode, Calibration mode, Factory reset mode and Demo play mode. To access the desired V-Synth feature, you must select the appropriate mode.
Here's how to change modes.

1. **Press [MODE].**
   The V-SYNTH MODE MENU window appears.

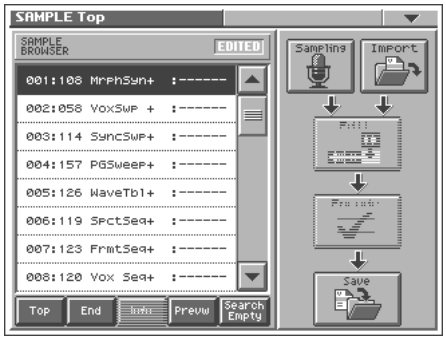


2. **Touch the touch screen to select the desired mode.**
   When you select a mode, the screen for that mode appears. The currently selected mode is shown in the upper left of each screen.

Patch Mode

In this mode you can play a single patch from the keyboard, and edit patch settings.

Sample Mode

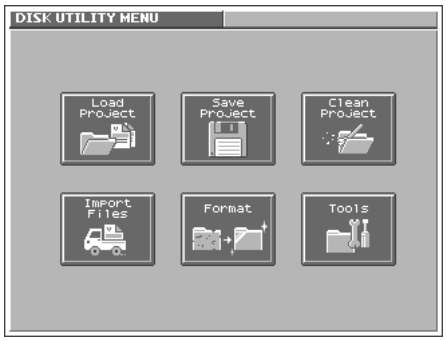


In this mode, you can sample the waves that form the basis of the sounds you create, and edit the sampled waves.

System Mode

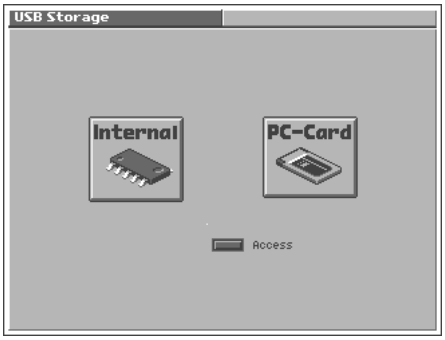
In this mode, you can set the overall behavior of the V-Synth, such as its tuning and how it handles received MIDI messages.

Disk Mode



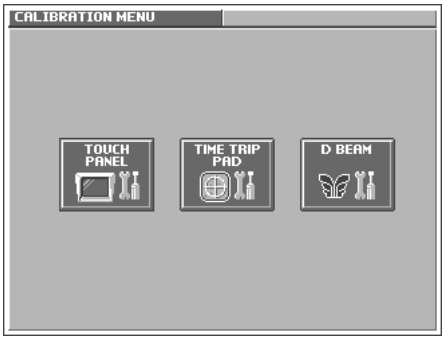
In this mode, you can perform operations related to disks, such as saving data on a disk or loading data from a disk.

USB Mode



In this mode, you can connect the V-Synth to your computer and exchange patch or wave data.

Calibration Mode



In this mode you can adjust the response of the touch screen and D Beam controller.

Factory Reset Mode

In this mode, you can reset to default factory settings.

Demo Play Mode

In this mode, you can play the built-in demo songs.

Basic Touch Screen Operation

The V-Synth features a touch screen. The touch screen lets you perform a variety of operations by lightly touching the screen.

NOTE

The touch screen responds to a light touch. Pressing the touch screen with too much force, or with a hard object, may damage it. Be careful not to apply excessive force, and touch it only with your finger.

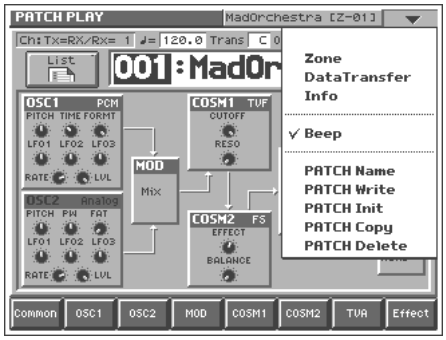
Enabling/Disabling the Beep Tone

You can specify whether or not a beep tone will be heard when you touch a valid point on the touch screen.

MEMO

At the factory setting, the beep tone will be sounded.

1. **In the upper right of the screen, touch <▼>.**
   A pulldown menu appears.



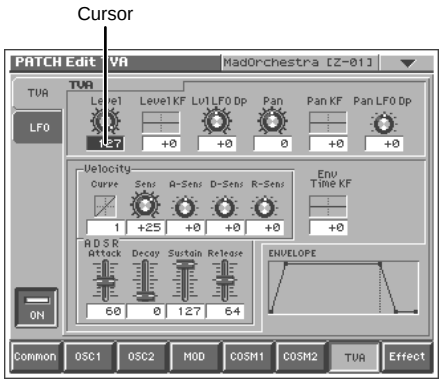
2. **In the pulldown menu, touch <Beep> to add a check mark (✔).**
   With this setting, the beep tone will be heard. If you perform the same procedure once again, the check mark will be cleared and the beep tone will no longer be heard.

MEMO

If you have turned off the beep tone, a "∇" appears in the title area at the top of the screen when you touch a valid point on the touch screen.

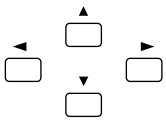
Moving the Cursor

A single screen or window displays multiple parameters or items for selection. To edit a parameter's value, move the cursor to the value. To select an item, move the cursor to the item. The cursor is a black rectangle, and the parameter value or item you select with the cursor is highlighted (displayed in inverted colors).



Cursor Buttons

Press [▲], [▼], [◄], or [►] (the cursor buttons) to move the cursor.



[▲]: moves the cursor up.

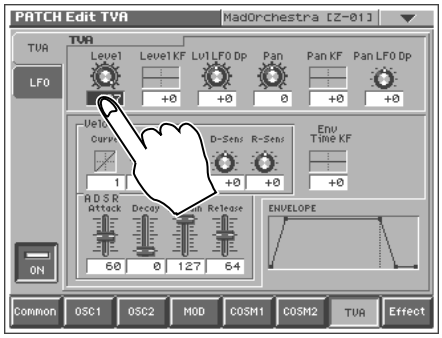
[▼]: moves the cursor down.

[◄]: moves the cursor to the left.

[►]: moves the cursor to the right.

Touch Screen

Directly touch a parameter value to move the cursor.



Editing a Value

To edit a value, you can use the VALUE dial, [INC / +] [DEC / -], or drag on the touch screen.

HINT

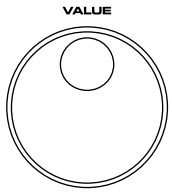
In each V-Synth screen, you can select a value using the cursor as described earlier, and modify its value.

NOTE

Each parameter has its own range of possible values. You cannot set any value smaller than the minimum value or greater than the maximum value.

VALUE Dial

Turning the VALUE dial clockwise increases the value, and turning it counterclockwise decreases its value. Hold down [SHIFT] as you move the VALUE dial to increase value increments to make large value changes more quickly.

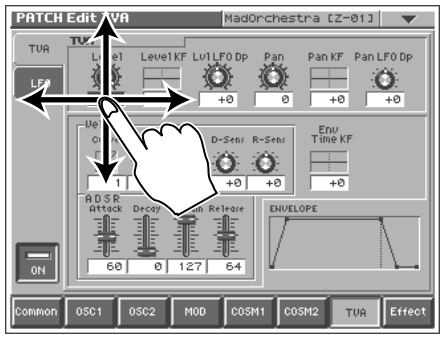


[INC / +] and [DEC / -]

Press [INC / +] to increase the selected value, and [DEC / -] to decrease it. Keep the button pressed for continuous adjustment. For faster value increases, keep [INC / +] pressed down and press [DEC / -]. To decrease values quickly, keep [DEC / -] pressed down and press [INC / +].

Touch Screen

Touch a parameter value, and drag your finger up / down or left / right. Dragging upward or to the right increases the value, and dragging downward or to the left decreases the value.



Playing in Patch Mode

Patch mode is the mode in which you can play the keyboard using a single sound (patch or rhythm set).

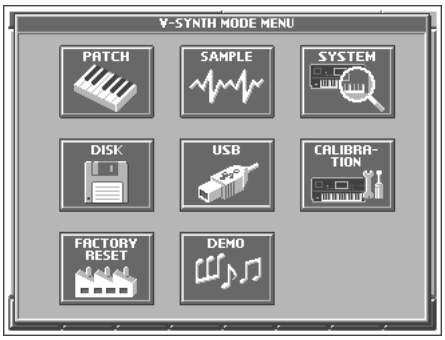
About the PATCH PLAY Screen

Displaying PATCH PLAY Screen

To access the PATCH PLAY screen, use the following procedure.

1. Press [MODE].

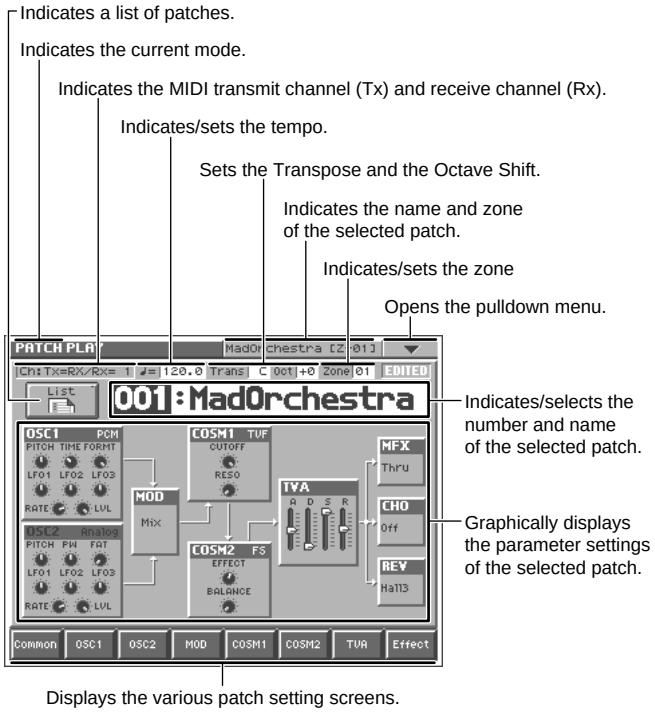
The V-SYNTH Mode MENU window appears.



2. Touch <PATCH>.

You will enter Patch mode, and the PATCH PLAY screen appears.

Functions in the PATCH PLAY Screen

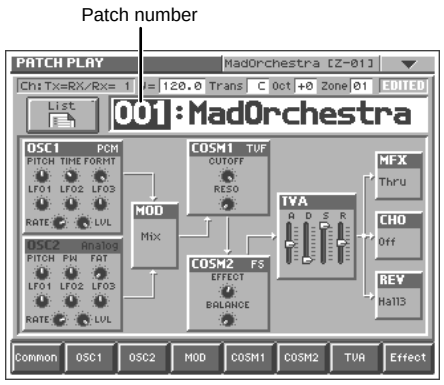


Selecting a Patch

V-Synth contains 512 patches for you to select and use.

All of these patches can be overwritten.

1. Access the PATCH PLAY screen (p. 21).



2. Move the cursor to the patch number, either by using the cursor buttons or by touching the patch number display.

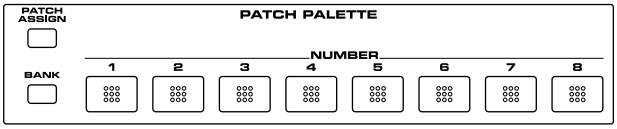
3. Turn the VALUE dial, or press [INC/+][DEC/-] to select a patch number. You can also do this by dragging on the touch screen.

Selecting Favorite Patches (Patch Palette)

You can bring together your favorite and most frequently used patches in one place by registering them into the patch palette. By using this function, you can rapidly select favorite patches from internal memory or a Wave Expansion Board.

For details on how to register a patch in the patch palette, refer to **"Registering a Favorite Patch (Patch Palette)"** (p. 35).

1. **Access the PATCH PLAY screen (p. 21).**
2. **Press NUMBER [1]–[8] to select a patch.**



3. **To switch the patch palette bank, hold down [BANK] and press NUMBER [1]–[8].**

   When you press [BANK], the indicator of the currently selected bank button (NUMBER [1]–[8]) will blink.

HINT

If you continue pressing [PATCH ASSIGN] or [BANK], the PATCH PALETTE window will appear. In this window you can view the patches that are registered in the currently selected bank.

Selecting Patches from the List

You can display a list of patches and select a patch from that list.

1. **Access the PATCH PLAY screen (p. 21).**
2. **Touch <List> in the upper left area of the display.**

   The PATCH List window appears.

3. **Select a patch from the list.**

   Either turn the VALUE dial or use [INC/+][DEC/-] to select a patch. You can also select a patch by touching it on the display.

HINT

If you select a patch in the list and play the keyboard, the selected patch will sound. This is a useful way to audition the sound of a patch.

4. **To view other patches, touch <017-032>–<241-256>, located at either side of the screen. To view higher-numbered patches, touch <257-512>, located at the bottom of the screen.**
5. **Touch <OK>.**

   The patch is selected and the PATCH List window closes.

Transposing the Keyboard in Semitone Steps (Transpose)

Transpose changes keyboard pitch in units of semitones.

This function is useful when you play transposed instruments such as trumpet or clarinet following a printed score.

1. **Press [TRANSPOSE] to light indicator.**

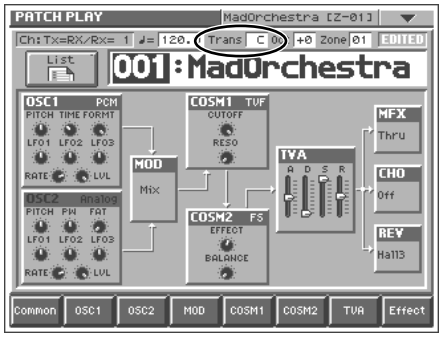
   This turns Transpose on.

2. **While holding down [TRANSPOSE], press [+OCT] or [-OCT] to transpose the keyboard.**

   Pressing [+OCT] once while holding down [TRANSPOSE] will raise the keyboard one semitone.

   Pressing [-OCT] once while holding down [TRANSPOSE] will lower the keyboard one semitone.

   The specified Transpose setting will be shown in the "Trans" indication of PATCH PLAY screen.



HINT

Alternatively, you can move the cursor to "Trans" in the PATCH PLAY screen and turn the VALUE dial or use [INC/+] [DEC/-] to make the setting. You can also do this by dragging on the touch screen.

3. **To turn off Transpose, press [TRANSPOSE] once again so that its indicator goes off.**

   The Transpose setting you make will be maintained.

NOTE

There is a single Transpose setting (Setup parameter) for the entire V-Synth. The changed setting will be remembered even if you switch patches.

Transposing the Keyboard in Octave Units (Octave Shift)

The **Octave Shift** function transposes the pitch of the keyboard in 1 octave units (-3– +3 octaves).

For playing a bass part more easily using your right hand, transpose the keyboard down by 1 or 2 octaves.

1. **Press [+OCT] or [-OCT] and its indicator will light.**

   Pressing [+OCT] once will raise the keyboard 1 octave.

   Pressing [-OCT] once will lower the keyboard 1 octave.

   The specified Octave Shift setting will be shown in the "Oct" indication of PATCH PLAY screen.

HINT

Alternatively, you can move the cursor to "Oct" in the PATCH PLAY screen and turn the VALUE dial or use [INC/+] [DEC/-] to make the setting. You can also do this by dragging on the touch screen.

NOTE

There is a single Octave Shift setting (Setup parameter) for the entire V-Synth. The changed setting will be remembered even if you switch patches.

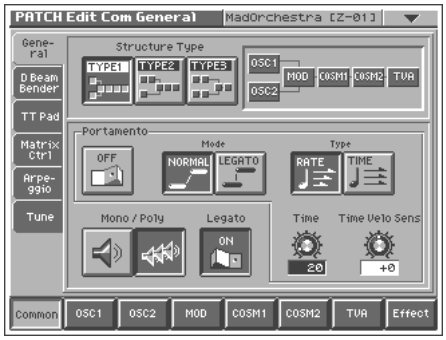
2. **To turn off the Octave Shift function, press the other button [+OCT] or [-OCT] of that pressed in step 1. The indicator will go off.**

Playing Single Notes (Mono)

When using a patch for a naturally monophonic instrument such as sax or flute, it is effective to play in mono.

1. **Access the PATCH PLAY screen (p. 21).**
2. **At the bottom of the screen, touch <Common>.**
3. **In the left side of the screen, touch the <General> tab.**

   The Patch Edit Com General screen appears.



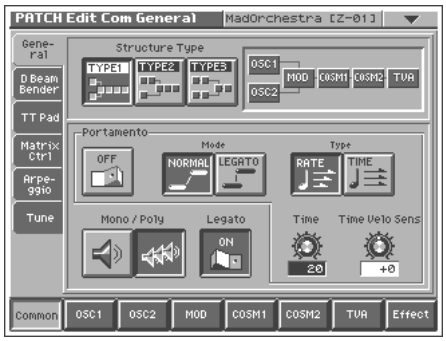
4. **In the "Mono/Poly" field, touch < >.**

   Now you can play in mono mode.

Creating Smooth Pitch Changes (Portamento)

Portamento is an effect which smoothly changes the pitch from the first-played key to the next-played key. By applying portamento when Mono mode is selected (see the preceding item), you can simulate performance effects such as slurring on a violin.

1. **Access the PATCH Edit Com General screen (p. 21).**



2. **In the "Portamento" field, touch the on/off switch to turn it "ON."**

   You're ready to play portamento.

3. **When you want to change the portamento setting, edit the following parameters in the screen of step 2.**

   Mode (Portamento Mode), **Type** (Portamento Type), **Time** (Portamento Time), **Time Velo Sens** (Portamento Time Velocity Sens)

☞ See (p. 37) for each parameter's functions.

Playing Arpeggios (Arpeggiator)

The V-Synth comes with an **arpeggiator** that can play arpeggios automatically. Once you turn on the arpeggiator, the keys you press will automatically be played as an arpeggio.

1. **Access the PATCH PLAY screen (p. 21).**
2. **Press ARPEGGIO [ON/OFF] to make the indicator light.**
   The arpeggiator is turned on.
3. **Play the keyboard.**
   The V-Synth arpeggiates what you've played.
4. **To adjust the tempo of the arpeggio, turn ARPEGGIO [TEMPO].**
   Turning the knob toward the right will speed up the tempo, and turning it toward the left will slow down the tempo.
5. **To finish playing arpeggios, press ARPEGGIO [ON/OFF] again so the indicator turns off.**

Holding an Arpeggio

By using the following procedure, you can produce arpeggios even without continuing to press the keyboard.

1. **Press ARPEGGIO [ON/OFF] to turn the Arpeggiator on.**
2. **Press ARPEGGIO [HOLD] to make the indicator light.**
3. **Play the keyboard.**
4. **If you play a different chord or notes while the arpeggio is being held, the arpeggio will change accordingly.**
5. **To cancel Arpeggio Hold, press ARPEGGIO [HOLD] again.**

When Using a Hold Pedal

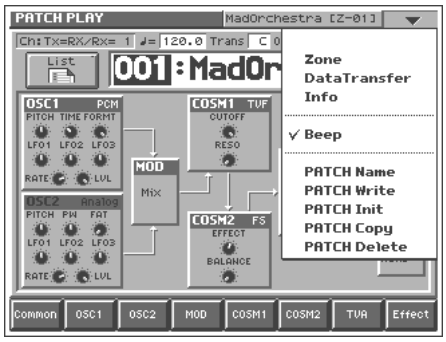
If you play an arpeggio while pressing the hold pedal, the arpeggio will continue to be played even if you release the keyboard.

1. **Connect an optional pedal switch (DP series) to the HOLD PEDAL jack.**
2. **Press ARPEGGIO [ON/OFF] to turn the Arpeggiator on.**
3. **Play the keyboard while pressing the hold pedal.**
4. **To play another chord, release the pedal, press it again as you play the next chord.**

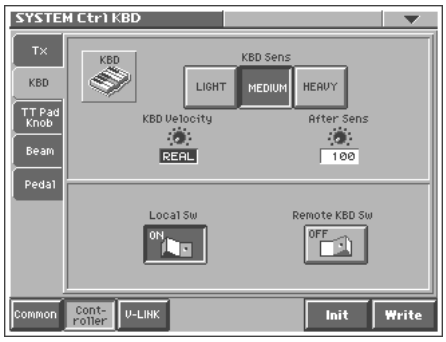
Using an External MIDI Keyboard to Play Arpeggios

You can also use the keyboard of an external MIDI instrument to play arpeggios.

1. **Use a MIDI cable to connect the V-Synth's MIDI IN connector to the MIDI OUT connector of your external MIDI keyboard.**
2. **Access the PATCH PLAY screen (p. 21).**
3. **Touch <▼> in the upper right of the screen.**
   A pulldown menu appears.



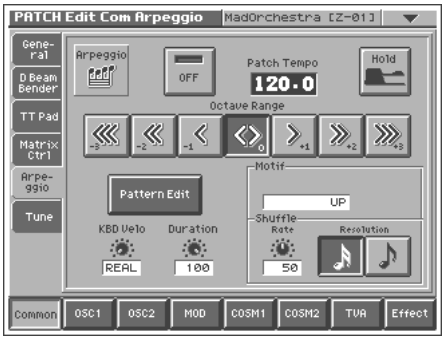
4. **In the pulldown menu, touch <System>.**
5. **At the bottom of the screen, touch <Controller>.**
6. **In the left side of the screen, touch the <KBD> tab.**
   The SYSTEM Ctrl KBD screen appears.



7. **In the "Remote KBD Sw" field, touch the on/off switch to turn it "ON."**
8. **Play your external MIDI keyboard.**

Making Arpeggiator Settings

1. **Access the PATCH PLAY screen (p. 21).**
2. **At the bottom of the screen, touch <Common>.**
3. **In the left side of the screen, touch the Arpeggio> tab.**
   The PATCH Edit Com Arpeggio screen appears.



In this screen you can set the following arpeggiator parameters.

Arpeggio Switch: Switches the Arpeggiator on/off.

Hold: Switch between Hold On/Hold Off for the Arpeggiator performance.

Patch Tempo: Specify the tempo of an arpeggio.

Octave Range: Specify the range of the arpeggio performance, in octave units.

KBD Velo: Specify the note strength of the keys you play.

Accent Rate: Vary the strength and note length of the accents to modify the rhythmic feel (groove) of the performance.

Motif: Specifies how the arpeggio will be sounded.

Shuffle Duration: Create shuffle rhythms by modifying the timing at which notes are sounded.

Shuffle Resolution: Specify the timing of the notes in terms of note value.

☞ For details regarding each parameter, refer to **"Arpeggio"** (p. 40).

HINT

Arpeggiator settings can be saved with each patch as part of the patch settings. This means that you can create patches that contain the most effective settings.

Creating an Original Arpeggio Pattern (Pattern Edit)

You can create your own **arpeggio pattern** that specifies how an arpeggio will be sounded. This gives you even more interesting ways to use arpeggios.

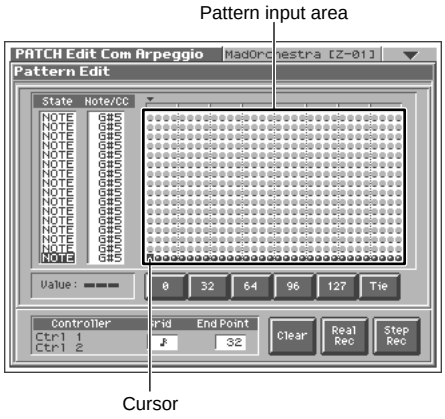
An arpeggio pattern is a set of data that can be up to 32 steps (horizontally) x 16 lines (vertically).

HINT

An arpeggio pattern can be saved for an individual patch as part of the patch settings. This means that you can create a patch designed specifically for that arpeggio pattern (or vice versa).

About the Pattern Edit Window

1. **Access the PATCH Edit Com Arpeggio screen (p. 25).**
2. **Touch <Pattern Edit>.**
   The Pattern Edit window will appear.



State

Specifies the status of each line.

NOTE: Note pitch

CTRL: Control change

Note/CC (Note/Control Change)

Specifies the note number or control change number assigned to each line. If Status is "NOTE," this will be a note number (C-1–G9). If Status is "CTRL," this will be a control change number (0–127).

Pattern Input Area

This area is where you input or edit notes or control changes. The symbols have the following meaning:

●: Note

=: Tie

❍: Control change

Value

Shows the velocity of the note or the value of the control change selected in the pattern input area.

0, 32, 64, 96, 127, Tie/Clr

When inputting notes: When you touch one of these buttons, a note with the velocity shown on that button will be input at the cursor location within the pattern input area. When you touch <Tie>, a tie will be input at the cursor location.

When inputting control changes: A control change with the value shown on that button will be input at the cursor location within the pattern input area. When you touch <Clr>, the selected control change will be erased.

When you are editing, these buttons modify the velocity of the note that is selected in the pattern input area, or the value of the control change.

HINT

You can also input the note velocity or control change value by using the VALUE dial or [INC/+][DEC/-].

Controller

When you operate the Time Trip pad (TTPadX/Y), D Beam controller (DBeamL/R), or assignable controllers (Ctrl_1/2), the value is shown here.

Grid

Specifies the note value that will correspond to "one step" of the arpeggio pattern.

♩(Quarter note), ♪(Eighth note), ♪.(Dotted eighth note),
♬ (Sixteenth note), ♬.(Dotted sixteenth note), 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯 (Thirty-second note)

End Point

Specifies the pattern length as a number of steps (1–32).

Clear

Erases the pattern data (p. 27).

Real Rec (Realtime Recording)

Use realtime recording to create a pattern (p. 26).

Step Rec (Step Recording)

Use step recording to create a pattern (p. 27).

Creating a Pattern by Playing in Real Time (Real Rec)

This method lets you create a pattern in a way similar to realtime recording on a sequencer. Your playing on the V-Synth's keyboard and your controller operations will be recorded "as is."

1. **Specify the Grid and End Point of the arpeggio pattern that you will be creating.**
   Move the cursor to each value box and set the value.
2. **Touch <Real Rec>.**
   The V-Synth will be in realtime-input standby mode, and the metronome will sound a guide rhythm.

3. **If you want to adjust the tempo, turn ARPEGGIO [TEMPO].**
   Turn the knob toward the right to make the tempo faster, or toward the left to make it slower.
4. **In time with the guide rhythm sounded by the metronome, play the V-Synth's keyboard and operate the controllers.**
   You can repeatedly record over the pattern length (number of steps) you specified in step 1. On each pass, you can add new notes and control changes to build up the pattern.

NOTE

The notes (specified pitches) and control changes in a single pattern cannot exceed a total of 16. All further (seventeenth and later) notes having a new pitch or control changes will not be recorded.

5. **When you are finished with realtime input, touch <Stop>.**
   The metronome guide will stop sounding.
6. **Press ARPEGGIO [ON/OFF] to turn on the arpeggiator, and play the keyboard to hear your realtime-recorded pattern.**

Creating a Pattern by Inputting One Step at a Time (Step Rec)

This method lets you create a pattern in a way similar to step-recording on a sequencer. You can record notes and control changes by inputting them one by one.

1. **Specify the End Point of the arpeggio pattern that you want to create.**

   Move the cursor to the End Point value box and make the setting.

2. **Touch <Step Rec>.**

   The V-Synth will be in step-input standby mode.

3. **Play the V-Synth's keyboard or operate a controller to input the first step.**

   You can repeatedly record over the pattern length (number of steps) you specified in step 1. On each pass, you can add new notes and control changes to build up the pattern.

HINT

- To input a tie, hold down the key of the note that you want to tie and press [►]. You will advance as many steps as the number of times you press [►].
- Step input records the strength (velocity) with which you press the key, and this will be reflected in the level or dynamics of the arpeggiated notes.
- Control changes will be input with the value that was in effect when you pressed [►].

NOTE

- The notes (specified pitches) and control changes in a single pattern cannot exceed a total maximum of 16. A newly pitched note or a control change that would exceed this total will not be recorded.
- Be aware that if you input another note while still holding down the key for the previously input note, these notes will be input as a chord located at the same step.

4. **When you are finished with step input, touch <Stop>.**

5. **Press ARPEGGIO [ON/OFF] to turn on the arpeggiator, and play the keyboard to hear your step-recorded pattern.**

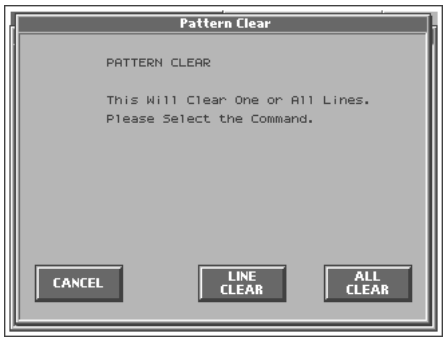
Erasing a Pattern (Clear)

Here's how to erase data from the pattern. You can erase a specific line or the entire pattern.

1. **To specify a line that you want to erase, move the cursor to that line.**

2. **Touch <Clear>.**

   A window like the following will appear.



3. **To erase a line of data, touch <LINE CLEAR>. To erase the entire pattern, touch <ALL CLEAR>. If you decide you don't want to clear anything, touch <CANCEL>.**

Applying Various Effects to the Sound

The V-Synth provides numerous ways in which you can make your performance more expressive, such as the Time Trip pad, D Beam controller, and assignable controllers.

Applying an Effect by Touching Your Finger to the Pad (Time Trip Pad)

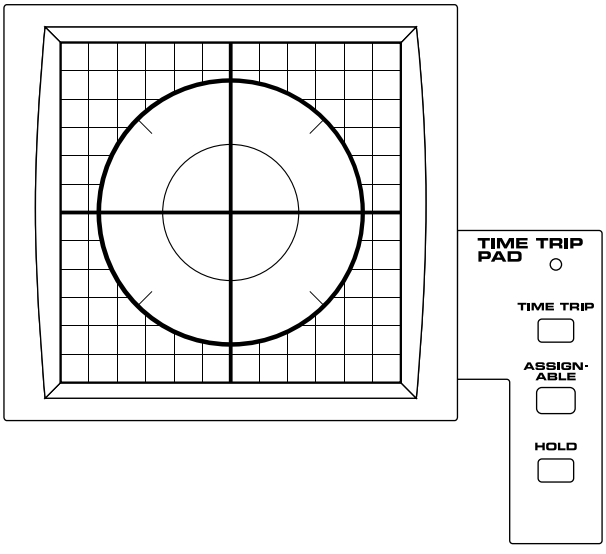
You can apply a variety of effects by touching your fingertip to the Time Trip pad located at the left side of the V-Synth's panel.

What is the Time Trip function?

One of the advantages of VariPhrase is that the playback location and speed of the wave can be changed in real time. The Time Trip function takes advantage of this ability to manually control the playback location and speed of the wave. In patches that use VariPhrase, switch the Time Trip Pad function to "TIME TRIP" to use this function. While playing the keyboard, touch the Time Trip pad and the currently sounding wave will stop at the current playback location. Then as you move your finger from that point in a circle, the wave playback will advance in the direction of conventional playback (clockwise), or the reverse (counterclockwise). Unlike "scratching" on a turntable, this lets you control the playback without affecting the pitch, so you can play the sound at the pitch you specify from the keyboard.

You can use the D Beam controller to produce similar results.

1. **Access the PATCH PLAY screen (p. 21).**
2. **Choose the function that you want to control from the Time Trip pad, and press the TIME TRIP PAD button for that function.**



[TIME TRIP]: Apply the Time Trip effect.

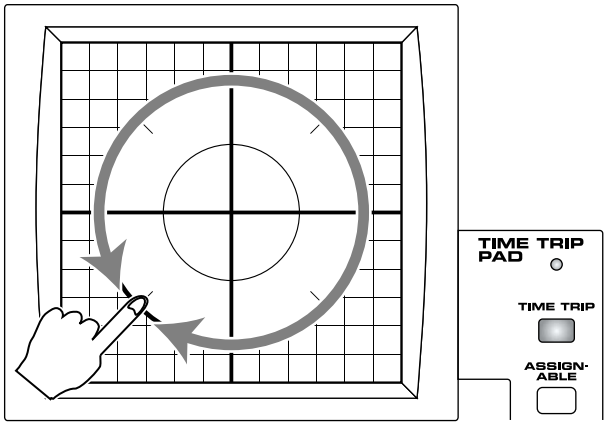
[ASSIGNABLE]: Apply the effect that is specified by each patch. If [ASSIGNABLE] is on, the effect is applied via matrix control. This means that matrix control settings must be made separately. Set the matrix control **Source** to "PAD-X" or "PAD-Y," and specify the parameter to be controlled in **Destination**. For details on these settings, refer to **"Matrix Ctrl"** (p. 38).

By setting matrix control **Source** to "TRIP-R," you can apply the Time Trip effect and the matrix control effect simultaneously. In this case, turn [TIME TRIP] on.

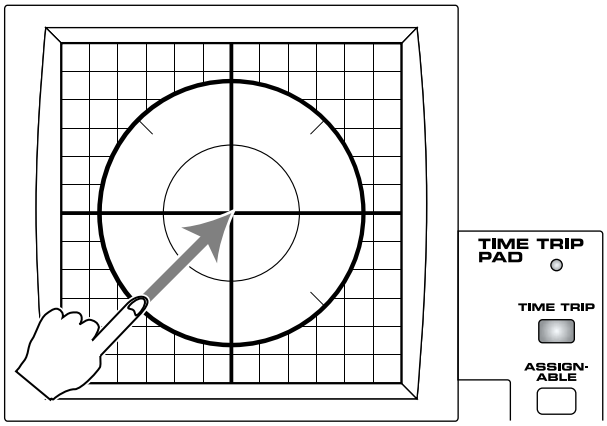
3. **While you play the keyboard to produce sound, place your fingertip on the Time Trip pad and move your finger in the following way.**

If [TIME TRIP] is on

The effect will be applied when you move your finger in a circle on the Time Trip pad.

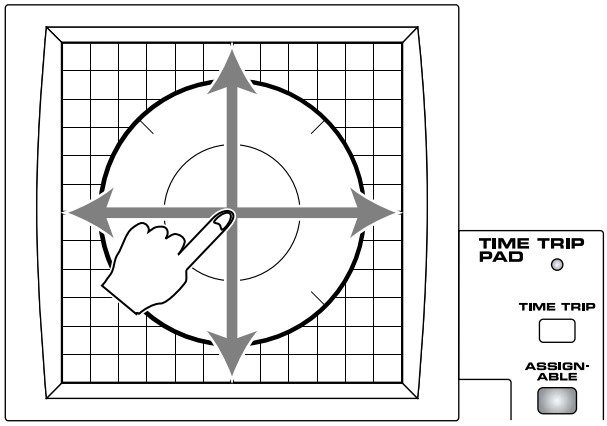


If you are using matrix control as well, the effect will be applied when you move your finger from the circumference of the Time Trip pad toward the center.



If [ASSIGNABLE] is on

The effect will be applied when you move your finger up / down / left / right on the Time Trip pad.



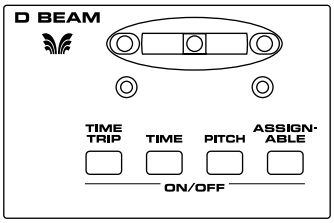
HINT

- By pressing TIME TRIP PAD [HOLD], you can cause the effect to be held even after you take your finger off the Time Trip pad.
- The Time Trip Pad settings are saved with each patch. This means that you can create patches that contain Time Trip Pad settings you like.

Applying an Effect by Passing Your Hand Over the D Beam (D Beam Controller)

The **D Beam controller** can be used simply by waving your hand over it. It can be used to apply various effects, depending on the function that is assigned to it. You can also create effects in which the sound changes instantaneously, in a way that would not be possible by operating a knob or the bender lever.

1. **Access the PATCH PLAY screen (p. 21).**
2. **Choose the function that you want to control from the D Beam controller, and press the D BEAM button for that function to turn on the D Beam controller.**



[TIME TRIP]: Apply the Time Trip effect.

[TIME]: Apply the time control effect.

[PITCH]: Apply the pitch control effect.

[ASSIGNABLE]: Apply the effect that is specified by each patch. By turning [ASSIGNABLE] on, you can apply the effect that is specified by each patch. In this case, however, unlike the other three functions, simply pressing the button to turn it on will not apply an effect. You will also need to make matrix control settings. Set the matrix control **Source** to "BEAM-L" or "BEAM-R," and specify the parameter to be controlled in **Destination**. For details on these settings, refer to **"Matrix Ctrl"** (p. 38).

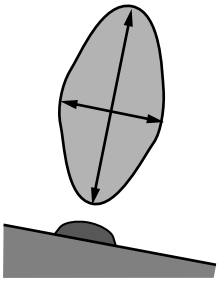
3. **While playing the keyboard to produce sound, place your hand over the D Beam, and slowly move it up and down.**
   Effects will be applied to the sound according to the button you pressed in step 2.
4. **To turn off the D Beam controller, once again press the button that you pressed in step 2, so its indicator goes out.**

HINT

- The D Beam controller settings are saved with each patch. This means that you can create patches that contain D Beam settings you like.
- By assigning a MIDI controller number to the D Beam controller, you can use the D Beam to control an external MIDI device that is connected. For details, refer to **"Beam"** (p. 79).

The usable range of the D Beam controller

The following diagram shows the usable range of the D Beam controller. Waving your hand outside this range will produce no effect.
The D BEAM indicator will light when the D Beam controller is responding.
The D BEAM indicator will not light if you are outside the valid range of the D Beam controller.



NOTE

The usable range of the D Beam controller will become extremely small when used under strong direct sunlight. Please be aware of this when using the D Beam controller outside.

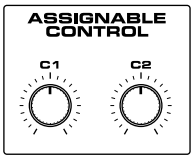
Applying an Effect by Turning a Knob (Assignable Controller)

You can turn the ASSIGNABLE CONTROL knobs to modify the sound in real time.

The assignable controllers use matrix control to apply effects to the sound. This means that you will need to make matrix control settings separately. Set the matrix control **Source** to "KNOB1" or "KNOB2," and specify the parameter to be controlled in **Destination**. For details on this setting, refer to **"Matrix Ctrl"** (p. 38).

1. **Access the PATCH PLAY screen (p. 21).**
2. **While playing the keyboard to produce sound, turn the ASSIGNABLE CONTROL knobs ([C1], [C2]).**

   The sound will change according to the function assigned to each knob.

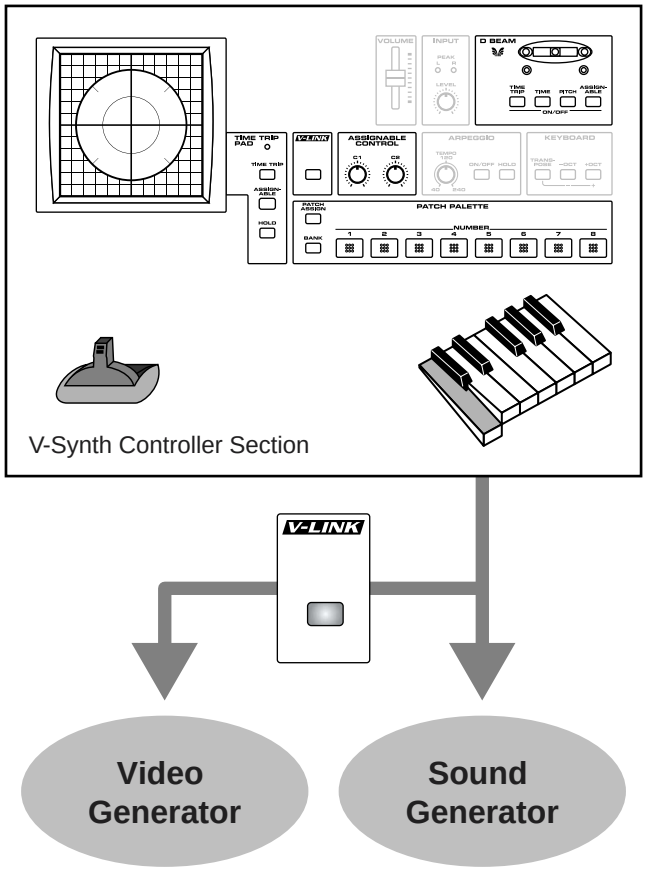


HINT

- The assignable controller settings are saved with each patch. This means that you can create patches that contain assignable controller settings you like.
- By assigning MIDI controller numbers to the assignable controllers, you can turn [C1] or [C2] to control an external MIDI device that is connected. For details, refer to **"TT Pad/Knob"** (p. 80).

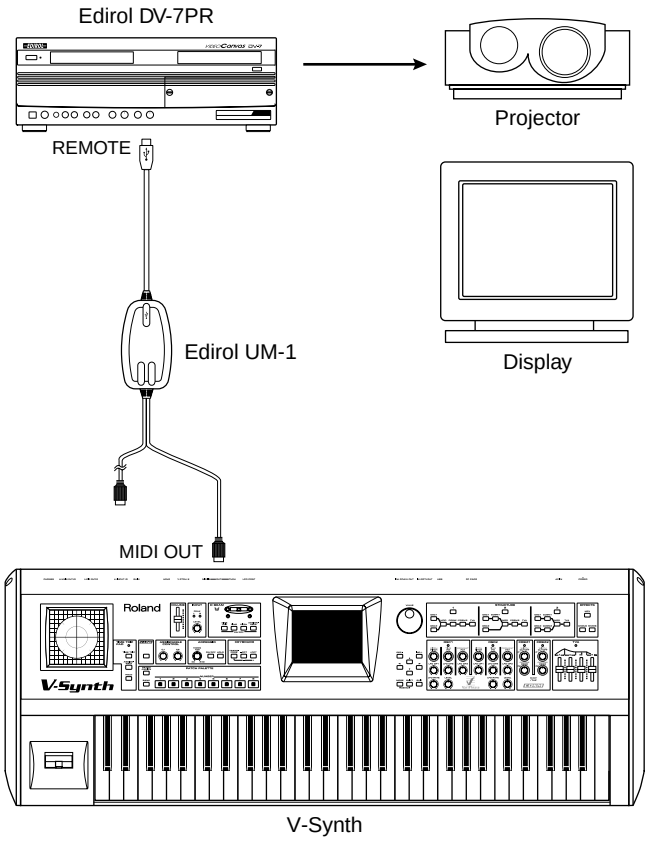
Synchronizing Music and Video While You Play the V-Synth (V-LINK)

The V-Synth lets you use the pitch bend / modulation lever, Time Trip pad, D Beam controller, and C1 / C2 knobs to control an externally connected video device that supports V-LINK. This means that your performance on the V-Synth can control not only sound but also images, producing sound and video effects that are linked to your playing.



V-LINK (V-LINK) is a function that provides for the play of music and visual material. By using V-LINK function, visual effects can be easily linked to, and made part of the expressive elements of a performance.

Example Connections



V-Synth

Enter V-LINK Mode

1. Press [V-LINK] so the indicator lights.

A PATCH PLAY screen like the one shown below appears, and the V-Synth will enter V-LINK mode.

In this screen you can view the V-LINK functions that are assigned to the various controllers.

For details on how to assign V-LINK functions to the controllers, refer to **"V-LINK Settings (V-LINK)"** (p. 80).

2. To exit V-LINK mode, press [V-LINK] once again so the indicator goes out.

V-LINK Functions that the V-Synth Can Control and MIDI Messages

You can assign the following functions to the V-Synth's controllers to control a V-LINK compatible video device.

V-LINK function	Transmitted MIDI message
Playback Speed	CC 10 (Panpot)
Dissolve Time (amount time the video clips overlap)	CC 5 (Portamento Time)
Audio (Volume of audio playback)	CC 7 (Volume)
Color Cb (color-difference signal)	CC 72 (Release)
Color Cr (color-difference signal)	CC 71 (Resonance)
Brightness	CC 74 (Cutoff)
VFX1 (Visual Effects 1)	CC 1 (Modulation)
VFX2 (Visual Effects 2)	CC 91 (Reverb)
VFX3 (Visual Effects 3)	CC 94 (Celeste)
VFX4 (Visual Effects 4)	CC 95 (Phaser)
Output Fade	CC 73 (Attack)
T Bar	CC 11 (Expression)
Dual Stream	CC 64 (Hold 1)
Time Trip	CC 92 (Tremolo) CC 93 (Chorus)
Palette1–8 (Selecting a palette)	CC 0 (Bank Select): 00H–07H
Clip1–8 (Selecting a video clip)	Program Change: 00H–07H

Creating a Patch

With the V-Synth, you have total control over a wide variety of settings. Each item that can be set is known as a **parameter**. When you change the values of parameters, you are doing what is referred to as **Editing**. This chapter explains the procedures used in creating patches, and the functions of the patch parameters.

How to Make the Patch Settings

Start with an existing patch and edit it to create a new patch. The sound of a patch is created by six sections of parameters. When editing a patch, you need to be aware of how each section affects the overall sound.

Four Tips for Editing Patches

● **Select a patch that is similar to the sound you wish to create.**

It's hard to create a new sound that's exactly what you want if you just select a patch and modify its parameters at random. It makes sense to start with a patch whose sound is related to what you have in mind.

● **Check the Structure setting.**

The structure type is an important parameter which determines how the six sections are combined. Before you actually begin editing, you should understand how the sections are related to each other.

● **Decide which section(s) you will use.**

When creating a patch, it is very important to decide which section(s) you will use. In the Edit screen of each section, use the on / off switch to specify whether that section will be used (on) or not used (off). You can also use the on / off buttons located in the STRUCTURE section of the V-Synth's panel.

● **Turn Effects off.**

Since the V-Synth effects have such a profound impact on its sounds, turn them off to listen to the sound itself so you can better evaluate the changes you're making. Since you will hear the original sound of the patch itself when the effects are turned off, the results of your modifications will be easier to hear. Actually, sometimes just changing effects settings can give you the sound you want.

1. **Access the PATCH PLAY screen, and select the patch whose settings you wish to modify (p. 21).**

HINT

If you want to create all your patches from the ground up, rather than the patches that have already been prepared, carry out the **Initialize** operation (p. 33).

2. **The parameters are organized into several editing groups. Touch one of the buttons at the bottom of the screen to select the edit group containing the parameters you want to set.**

HINT

In the PATCH PLAY screen, you can touch the display area for each section to jump to the setting screen for that section.

3. **Touch one of the tabs in the left of the screen to select the desired editing screen.**

☞ For details on how the parameters are grouped, refer to **"Patch Parameters"** (p. 102).

4. **In each editing screen, touch the touch screen to set the parameters.**

☞ For details on how to use the touch screen, refer to **"Basic Touch Screen Operation"** (p. 19).

5. **When editing a parameter that requires you to specify a value, move the cursor to the value box of that parameter. Then modify the value by either turning the VALUE dial or pressing [INC/+] or [DEC/-]. You can also modify a value by dragging over the touch screen.**

6. **Repeat steps 2–5 to complete a patch.**

7. **If you wish to save the changes you've made, perform the Save operation (p. 34). If you do not wish to save changes, press [EXIT] to return to the PATCH PLAY screen.**

If you return to the PATCH PLAY screen without saving, the display will indicate "EDITED," reminding you that the patch settings have been modified.

NOTE

If you turn off the power or select a different patch while the display indicates "EDITED," your edited patch will be lost.

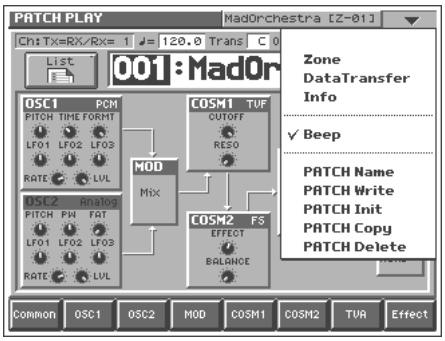
Initializing Patch Settings (PATCH Init)

"Initialize" means to return the settings of the currently selected patch to a standard set of values.

NOTE

The Initialize operation will affect only the currently selected patch in temporary area; the patches that are stored in internal memory and work area will not be affected. If you wish to restore all of the V-Synth's settings to their factory values, perform a Factory Reset (p. 98).

1. **Access the PATCH PLAY screen, and select the patch that you wish to initialize (p. 21).**
2. **Touch <▼> in the upper right of the screen.**
   A pulldown menu appears.



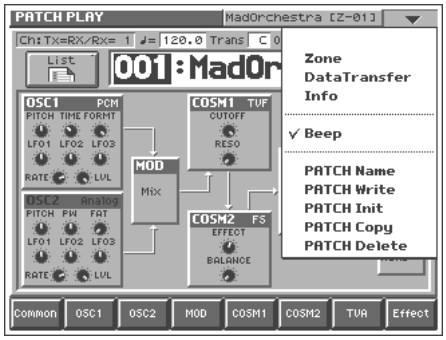
3. **In the pulldown menu, touch <PATCH Init>.**
   A window like the following appears.

4. **Touch <EXECUTE>.**
   The initialization will be carried out, and you'll be returned to the Patch Edit screen.

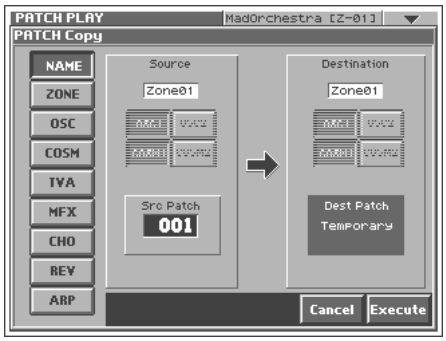
Copying Patch Settings (PATCH Copy)

This operation copies the settings of any desired patch to the currently selected patch. You can use this feature to make the editing process faster and easier.

1. **Access the PATCH PLAY screen, and select the copy-destination patch (Dest Patch) (p. 21).**
2. **Touch <▼> in the upper right of the screen.**
   A pulldown menu appears.



3. **In the pulldown menu, touch <PATCH Copy>.**
   The PATCH Copy window appears.



4. **Touch a button in the left side of the screen to select the object you want to copy.**
   <NAME>: Copy only the patch name.
   <ZONE>: Copy patch settings for one zone.
   <OSC>: Copy oscillator parameter settings. Specify the copy-source (Source) and copy-destination (Destination) oscillator (OSC1 / OSC2).
   <COSM>: Copy COSM parameter settings. Specify the copy-source (Source) and copy-destination (Destination) COSM section (COSM1 / COSM2).
   <TVA>: Copy TVA parameter settings.
   <MFX>: Copy MFX settings.
   <CHO>: Copy chorus settings.
   <REV>: Copy reverb settings.
   <ARP>: Copy arpeggiator settings.
5. **Specify the zone (Zone 01–Zone 16) for the copy source (Source) and copy destination (Destination). Move the cursor to "Zone**" and make your selection.**
6. **Move the cursor to "Src Patch" and select the copy-source patch number.**

HINT

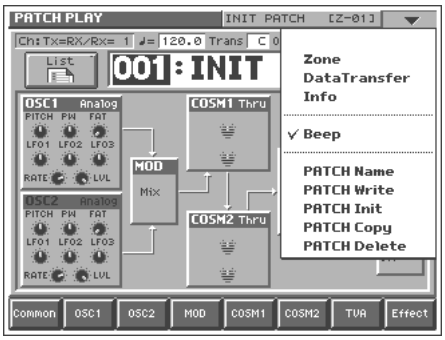
For the Zone Copy, Oscillator Copy, COSM Copy, and TVA Copy operations, you can specify the currently selected patch as the copy source by setting "SrcPatch" to "TEMP."

7. **Touch <Execute> to execute the copy operation.**

Naming a Patch (PATCH Name)

Before you save the patch, here's how to give it a new name.

1. **Make sure that the patch that you want to name is selected.**
2. **Touch <▼> in the upper right of the screen.**
   A pulldown menu appears.



3. **In the pulldown menu, touch <PATCH Name>.**
   The PATCH Name window appears.

4. **Touch the on-screen alphabetic or numeric keys to enter the new name in the text box.**
   The on-screen keys have the following functions.
   <←><→>: Move the cursor in the text box to the desired input location.
   <SHIFT>: Turn this on when you want to input uppercase letters or symbols.
   <Insert>: Turn this on when you want to insert a character at the cursor location.
   <Clear>: Erases all characters in the text box.
   <Delete>: Deletes the character at the cursor location.
   <Back>: Deletes the character that precedes the cursor location.

HINT

You can also move the input location cursor by pressing the [◄][►] cursor buttons. Pressing [▲] will change the character at the cursor location to uppercase, and pressing [▼] will change it to lowercase.

5. **When you have finished inputting, touch <OK> to finalize the patch name.**

Saving Patches (PATCH Write)

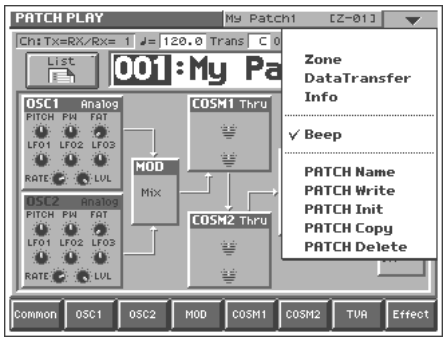
Changes you make to sound settings are temporary, and will be lost if you turn off the power or select another sound. If you want to keep the modified sound, you must save it in the internal (internal memory).

When you modify the settings of a patch, the PATCH PLAY screen will indicate "EDITED." Once you save the patch into internal memory, the "EDITED" indication goes away.

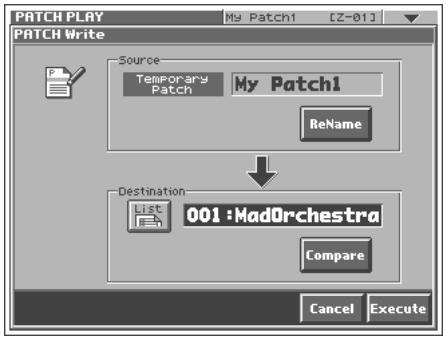
NOTE

When you perform the save procedure, the data that previously occupied the save destination will be lost. However, the factory setting data can be recovered by performing the Factory Reset (p. 98).

1. **Make sure that the patch you wish to save is selected.**
2. **Touch <▼> in the upper right of the screen.**
   A pulldown menu appears.



3. **In the pulldown menu, touch <PATCH Write>.**
   The PATCH Write window appears.



4. **Turn the VALUE dial to specify the save-destination patch.**

HINT

- By touching <Compare> you can check the save-destination patch (Compare function).
- When you touch <List>, the PATCH List window will appear, allowing you to select the save-destination patch from the list.

5. Touch <Execute> to execute the Save operation.

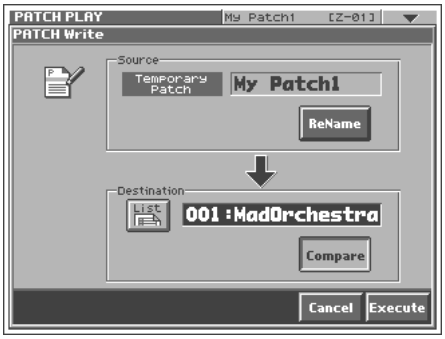
Auditioning the Save-Destination Patch (Compare)

Before you save a patch, you can audition the patch which currently occupies the save destination to make sure that it is one you don't mind overwriting. This can help prevent important patches from being accidentally overwritten and lost.

1. Follow the procedure in "Saving Patches (PATCH Write)" through step 4 to select the save destination.

2. Touch <Compare> to turn it on.

Now you can play the patch that is in the currently selected save destination.



3. Play the keyboard to sound the save destination patch, then check whether you really want to overwrite it.

NOTE

The patch auditioned using the Compare function may sound slightly different than when it is played normally.

4. If you wish to change the save destination, re-specify the save-destination patch by using the VALUE dial.

5. Touch <Execute> to execute the Save operation.

Registering a Favorite Patch (Patch Palette)

You can bring together your favorite and most frequently used patches in one place by registering them into the patch palette. By using this function you can rapidly select favorite patches from internal memory. You can register a total of 64 sounds (8 sounds x 8 banks) as favorite sounds.

For details on how to select patches that are registered in the patch palette, refer to **"Selecting Favorite Patches (Patch Palette)"** (p. 22).

1. Access the PATCH PLAY screen, and select the patch that you wish to register (p. 21).

2. Hold down [BANK] and press a NUMBER [1]–[8] to select the bank in which you wish to register the sound.

When you press [BANK], the indicator of the currently selected bank button (NUMBER [1]–[8]) will blink.

HINT

If you continue pressing [PATCH ASSIGN] or [BANK], the PATCH PALETTE window will appear. In this window you can view the patches that are registered in the currently selected bank.

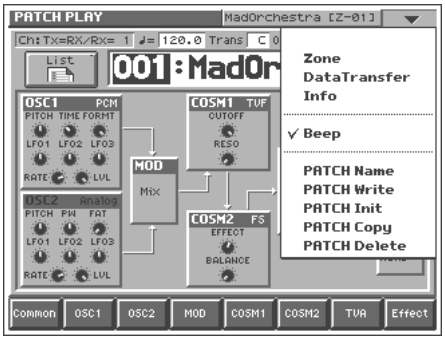
3. Hold down [PATCH ASSIGN] and press a NUMBER [1]–[8] to select the button at which you wish to register the sound.

When the display indicates "Completed!," registration has been completed.

Deleting Patches (PATCH Delete)

Delete unneeded patches from the internal memory.

1. **Touch <▼> in the upper right of the screen.**
   A pulldown menu appears.



2. **In the pulldown menu, touch <PATCH Delete>.**
   The PATCH Delete List window appears.

3. **From the list, select the patch that you want to delete.**
   Either turn the VALUE dial or use [INC/+][DEC/-] to select a patch. You can also select a patch by touching it on the display.

HINT

Each screen in the PATCH Delete List window shows a group of 16 patches. To view other patches, touch <017-032>–<241-256>, located at either side of the screen. To view higher-numbered patches, touch <257-512>, located at the bottom of the screen.

4. **Touch <Execute>.**
   The selected patch will be deleted.

5. **If you want to continue deleting other patches, repeat steps 3 and 4.**

6. **Press [EXIT].**
   The PATCH Delete List window closes.

Functions of Patch Parameters

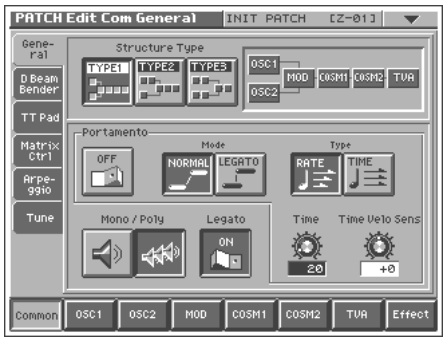
This section explains the functions the different patch parameters have, as well as the composition of these parameters.

MEMO

Parameters marked by "★" can be controlled by specific MIDI messages (Matrix Control). In the PATCH Edit Com Matrix Ctrl screen you can specify how the parameter will be controlled (p. 38). Parameters marked by "◆" can be controlled by panel buttons or knobs.

Settings Common to the Entire Patch (Common)

General



Structure Type ◆

Specifies how the various sound-creating elements will be combined.

Value

TYPE1: This is the most conventional structure. Different sounds from OSC1 and OSC2 are mixed by MOD, processed by COSM1 to create the tonal character (e.g., using SBF (Side Band Filter)), and then processed by COSM2 to adjust the tone (e.g., using TVF).

TYPE2: This structure connects OSC1 and OSC2 asymmetrically. This is effective when using a modulation that has the modulator set to anything other than "MIX." Typically, you will use OSC1 and COSM1 to create the basic sound, then select the OSC2 sound and MOD settings to add variation, and finally select TVF in COSM2 to adjust the tone.

TYPE3: In this structure, OSC1 is paired with COSM1, and OSC2 is paired with COSM2. You can use a controller such as the Time Trip Pad to morph between the sound created by OSC1 and COSM1 and the sound created by OSC2 and COSM2.

Portamento (Portamento Switch)

Specifies whether the portamento effect will be applied (ON) or not (OFF).

Value: OFF, ON

Portamento

Portamento is an effect which smoothly changes the pitch from the first-played key to the next-played key. By applying portamento when the Mono / Poly parameter is monophonic, you can simulate slide performance techniques on a violin or similar instrument.

Mode (Portamento Mode)

Specifies the performance conditions for which portamento will be applied.

Value

NORMAL: Portamento will always be applied.

LEGATO: Portamento will be applied only when you play legato (i.e., when you press the next key before releasing the previous key).

Type (Portamento Type)

Specifies the type of portamento effect.

Value

RATE: The time it takes will depend on the distance between the two pitches.

TIME: The time it takes will be constant, regardless of how far apart in pitch the notes are.

Time (Portamento Time)

When portamento is used, this specifies the time over which the pitch will change. Higher settings will cause the pitch change to the next note to take more time.

Value: 0–127

Time Velo Sens (Portamento Time Velocity Sensitivity)

This allows keyboard dynamics to affect the portamento Time. If you want portamento Time to be speeded up for strongly played notes, set this parameter to a positive (+) value. If you want it to be slowed down, set this to a negative (-) value.

Value: -63– +63

Mono / Poly

Specifies whether the patch will play monophonically or polyphonically. The monophonic setting is effective when playing a solo instrument patch such as sax or flute.

Value

: Only the last-played note will sound.

: Two or more notes can be played simultaneously.

Legato (Legato Switch)

Legato is valid when the Mono / Poly parameter is set to monophonic. This setting specifies whether the Legato function will be used (ON) or not (OFF).

Value: OFF, ON

With the Legato Switch parameter "ON," pressing a key while continuing to press a previous key causes the note to change pitch to the pitch of the most recently pressed key, sounding all the while. This creates a smooth transition between notes, which is effective when you wish to simulate the hammering-on and pulling-off techniques used by a guitarist.

D Beam / Bender

Octave Shift

Adjusts the pitch of the patch's sound up or down in units of an octave (+ / -3 octaves).

Value: -3– +3

D Beam (D Beam Type) ◆

Specifies the effect that will be controlled by the D Beam controller.

Value

OFF: The D Beam controller will not be used.

Time Trip: The D Beam controller will control the Time Trip effect.

Time: The D Beam controller will control the Time Control effect.

Pitch: The D Beam controller will control the Pitch Control effect.

Assignable: The D Beam controller will control the effect specified for each patch.

For details on how to specify the effect that will be controlled when "Assignable" is selected, refer to **"Matrix Ctrl"** (p. 38).

The level meters at both sides of "D Beam" in the screen show the state of response as you move your hand closer to the D Beam controller.

Bend Range Up (Pitch Bend Range Up)

Specifies the degree of pitch change in semitones when the Pitch Bend lever is all the way right. For example, if this parameter is set to "12," the pitch will rise one octave when the pitch bend lever is moved to the right-most position.

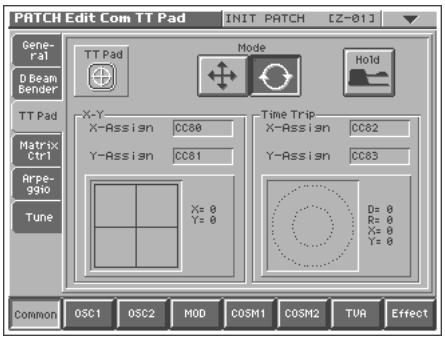
Value: 0–48

Bend Range Down (Pitch Bend Range Down)

Specifies the degree of pitch change in semitones when the Pitch Bend lever is all the way left. For example if this is set to "-48" and you move the pitch bend lever all the way to the left, the pitch will fall 4 octaves.

Value: 0–48

TT Pad



Mode (Time Trip Pad Mode)

Specifies the operating mode of the Time Trip pad.

Value

: XY mode. The effect will be applied when you move your finger up / down / left / right on the Time Trip pad.

: Time Trip mode. The effect will be applied when you move your finger in a circle over the Time Trip pad.

Hold (Time Trip Pad Hold Switch) ◆

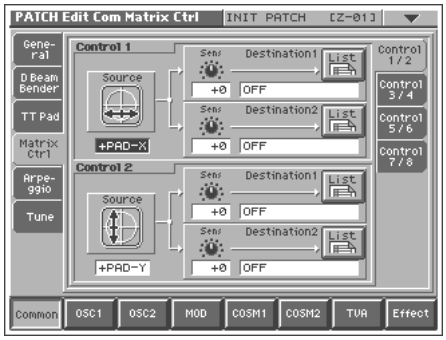
Specifies whether the current value will be maintained (ON) when you remove your finger from the Time Trip pad, or not maintained (OFF).

Value: OFF, ON

For details on settings for the Time Trip effect, refer to **"Matrix Ctrl"** (p. 38) and **"TT Pad/Knob"** (p. 80).

In the screen, "X-Y" and "Time Trip" indicate the effect that is assigned and the location of the pad that your finger touched.

Matrix Ctrl



Matrix Control

Ordinarily, if you wanted to change tone parameters using an external MIDI device, you would need to send System Exclusive messages—MIDI messages designed exclusively for the V-Synth. However, System Exclusive messages tend to be complicated, and the amount of data that needs to be transmitted can get quite large.

For that reason, a number of the more typical of the V-Synth's patch parameters have been designed so they accept the use of Control Change (or other) MIDI messages for the purpose of making changes in their values. This provides you with a variety of means of changing the way patches are played. For example, you can use the Pitch Bend lever to change the LFO cycle rate, or use the keyboard's touch to open and close a filter.

The function which allows you use MIDI messages to make these changes in realtime to the tone parameters is called the **Matrix Control**.

To use the Matrix Control, specify which MIDI message (Source parameter) will be used to control which parameter (Destination parameter), and how greatly (Sns parameter).

Up to eight Matrix Controls can be used in a single patch. In the right side of the screen, touch the "Control 1 / 2"–"Control 7 / 8" tabs to select the matrix control that you want to use.

Source (Matrix Control Source)

Sets the MIDI message used to change the patch parameter with the Matrix Control.

Value

OFF: Matrix control will not be used.

CC01–31, 33–95: Controller numbers 1–31, 33–95

For more information about Control Change messages, please refer to **"MIDI Implementation"** (p. 153).

BEND: Pitch Bend

AFT: Aftertouch

+PAD-X: Time Trip pad (horizontal direction from the center)

+PAD-Y: Time Trip pad (vertical direction from the center)

PAD-X: Time Trip pad (horizontal direction)

PAD-Y: Time Trip pad (vertical direction)

TRIP-R: Time Trip pad (center from the circumference)

BEAM-L: D Beam controller (left)
BEAM-R: D Beam controller (right)
KNOB1: Assignable Controller ([C1])
KNOB2: Assignable Controller ([C2])
VELO: Velocity (pressure you press a key with)
KEYF: Note Number

Sens (Matrix Control Sens)

Sets the amount of the Matrix Control's effect that is applied. If you wish to modify the selected parameter in a positive (+) direction – i.e., a higher value, toward the right, or faster etc. – from its current setting, select a positive (+) value. If you wish to modify the selected parameter in a negative (-) direction – i.e., a lower value, toward the left, or slower etc. – from its current setting, select a negative (-) value. When both positive and negative are selected, the changes are greater as the value increases. Set it to "0" if you don't want this effect.

Value: -63– +63

Destination 1, 2 (Matrix Control Destination 1, 2)

Specifies the parameters that will be controlled by the matrix controllers. When not controlling parameters with the Matrix Control, set this to "OFF." Up to two parameters can be specified for each Matrix Control, and controlled simultaneously.

Value

You can control the following parameters. For details on each parameter, refer to the corresponding reference page.

MEMO

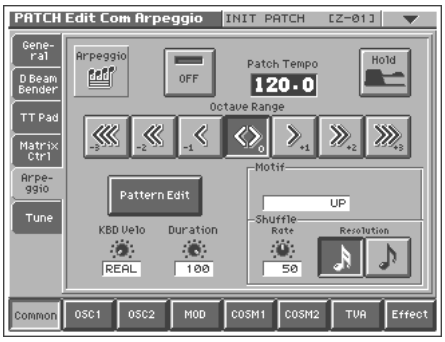
In this manual, Parameters that can be controlled using the Matrix Control are marked with a "H."

OSC1/2-PITCH: Oscillator Pitch (p. 43)
OSC1/2-TIME/PW: Time / Pulse Width (p. 44)
OSC1/2-FORMA/FAT: Formant / Fat (p. 44, p. 45)
OSC1/2-LVL: Level (p. 45)
OSC1/2-PENV-ATK: Pitch Envelope Attack Time (p. 48)
OSC1/2-PENV-DCY: Pitch Envelope Decay Time (p. 48)
OSC1/2-PENV-REL: Pitch Envelope Release Time (p. 48)
OSC1/2-TENV-ATK: Time Envelope Attack Time (p. 48)
OSC1/2-TENV-DCY: Time Envelope Decay Time (p. 48)
OSC1/2-TENV-REL: Time Envelope Release Time (p. 48)
OSC1/2-FENV-ATK: Formant Envelope Attack Time (p. 48)
OSC1/2-FENV-DCY: Formant Envelope Decay Time (p. 48)
OSC1/2-FENV-REL: Formant Envelope Release Time (p. 48)
OSC1/2-AENV-ATK: Oscillator TVA Envelope Attack Time (p. 48)
OSC1/2-AENV-DCY: Oscillator TVA Envelope Decay Time (p. 48)
OSC1/2-AENV-REL: Oscillator TVA Envelope Release Time (p. 48)
OSC1/2-LFO-RATE: Oscillator LFO Rate (p. 49)
OSC1/2-LFO-PCH: Oscillator Pitch LFO Depth (p. 43)
OSC1/2-LFO-TM/PW: Time / Pulse Width LFO Depth (p. 44, p. 44)
OSC1/2-LFO-FR/FT: Formant / Fat LFO Depth (p. 44, p. 45)
OSC1/2-LFO-LVL: Oscillator Level LFO Depth (p. 45)
CSM1/2-PRM1: (p. 111)
CSM1/2-PRM2: (p. 111)
CSM1/2-ENV1-ATK: COSM Envelope Attack Time (p. 48)
CSM1/2-ENV1-DCY: COSM Envelope Decay Time (p. 48)
CSM1/2-ENV1-REL: COSM Envelope Release Time (p. 48)
CSM1/2-ENV2-ATK: COSM Envelope Attack Time (p. 48)
CSM1/2-ENV2-DCY: COSM Envelope Decay Time (p. 48)
CSM1/2-ENV2-REL: COSM Envelope Release Time (p. 48)
CSM1/2-LFO-RATE: COSM LFO Rate (p. 49)
CSM1/2-LFO-PRM1: (p. 111)
CSM1/2-LFO-PRM2: (p. 111)
TVA-LVL: Level (p. 47)
TVA-ENV-ATK: TVA Envelope Attack Time (p. 48)
TVA-ENV-DCY: TVA Envelope Decay Time (p. 48)
TVA-ENV-REL: TVA Envelope Release Time (p. 48)
TVA-LFO-RATE: TVA LFO Rate (p. 49)
TVA-LFO-LVL: Level LFO Depth (p. 47)
TVA-LFO-PAN: Pan LFO Depth (p. 47)
MFX-SEND: MFX Send Level (p. 50)
CHO-SEND: Chorus Send Level (p. 50)
REV-SEND: Reverb Send Level (p. 50)
MFX1–3: (p. 116)
TVA-PAN: Pan (p. 47)

HINT

When you touch <List>, the Destination List window will appear, allowing you to select the Matrix Control Destination from the list.

Arpeggio



Arpeggio Switch ◆

Switches the Arpeggiator on / off.

Value: OFF, ON

Patch Tempo ◆

Specify the tempo of an arpeggio. When Clock Source parameter (p. 75) is set to "INTERNAL," this setting value is effective.

Value: 20.0–250.0

Hold (Arpeggio Hold Switch) ◆

Switch between Hold On / Hold Off for the Arpeggiator performance.

Value: OFF, ON

Octave Range (Arpeggio Octave Range)

Sets the key range in octaves over which arpeggio will take place. If you want the arpeggio to sound using only the notes that you actually play, set this parameter to "0." To have the arpeggio sound using the notes you play and notes 1 octave higher, set this parameter to "+1." A setting of "-1" will make the arpeggio sound using the notes you play and notes 1 octave lower.

Value: -3– +3

Pattern Edit

Press this when you want to create an original arpeggio pattern.

☞ For details on creating an arpeggio pattern, refer to **"Creating an Original Arpeggio Pattern (Pattern Edit)"** (p. 25).

KBD Velo (Arpeggio Keyboard Velocity)

Specifies the loudness of the notes that you play.

If you want the velocity value of each note to depend on how strongly you play the keyboard, set this parameter to "REAL." If you want each note to have a fixed velocity regardless of how strongly you play the keyboard, set this parameter to the desired value (1–127).

Value: REAL, 1–127

Duration (Arpeggio Duration)

Modifies the length of the notes to adjust the "groove" feel of the arpeggio. A setting of "100%" will produce the most pronounced groove feel.

Value: 0–100%

Motif (Arpeggio Motif)

Sets the order in which notes of the chord will sound.

Value

UP: Notes you press will be sounded, beginning from low to high.

DOWN: Notes you press will be sounded, from high to low.

UP&DOWN: Notes you press will be sounded, from low to high, and then back down from high to low.

RANDOM: Notes you press will be sounded, in random order.

NOTE ORDER: Notes you press will be sounded in the order in which you pressed them. By pressing the notes in the appropriate order you can produce melody lines. Up to 128 notes will be remembered.

RHYTHM: Unlike a conventional arpeggio, the notes that you specified when inputting the pattern will always sound. The keys that you press while performing will not affect the result; the specified pattern will play regardless of the pitch of the keys you play. This is suitable for playing a drum patch (p. 53).

PHRASE: Pressing a single key will sound the phrase based on the pitch of that key. If multiple keys are pressed, the last-pressed key will be valid.

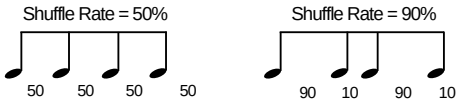
AUTO: The timing at which the keys are sounded is assigned automatically, starting at the lowest key that you pressed.

Shuffle Rate (Arpeggio Shuffle Rate)

This setting lets you modify the note timing to create shuffle rhythms.

With a setting of "50%" the notes will be spaced evenly. As the value is increased, the note timing will have more of a "dotted" (shuffle) feel.

Value: 0–100%

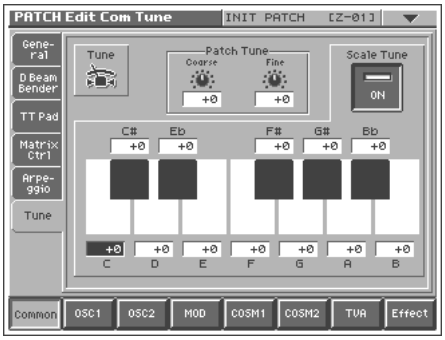


Shuffle Resolution (Arpeggio Shuffle Resolution)

Specify the timing resolution in terms of a note value. The note value can be specified as either an 16th note or a eighth note.

Value:

Tune



Patch Coarse Tune

Adjusts the pitch of the patch's sound up or down in semitone steps (+/-4 octaves).

Value: -48– +48

Patch Fine Tune

Adjusts the pitch of the patch's sound up or down in 1-cent steps (+/-50 cents).

Value: -50– +50

MEMO

One cent is 1/100th of a semitone.

Scale Tune (Scale Tune Switch)

Turn this on when you wish to use a tuning scale other than equal temperament.

Value: OFF, ON

The V-Synth allows you to play the keyboard using temperaments other than equal temperament. The pitch is specified in one-cent units relative to the equal tempered pitch.

MEMO

- One-cent is 1/100th of a semitone.
- The selected scale applies to MIDI messages received from an external MIDI device.

Equal Temperament

This tuning divides the octave into 12 equal parts, and is the most widely used method of temperament used in Western music. The V-Synth employs equal temperament when the Scale Tune Switch is set to "OFF."

Just Temperament (Tonic of C)

Compared with equal temperament, the principle triads sound pure in this tuning. However, this effect is achieved only in one key, and the triads will become ambiguous if you transpose.

Arabian Scale

In this scale, E and B are a quarter note lower and C#, F# and G# are a quarter-note higher compared to equal temperament. The intervals between G and B, C and E, F and G#, Bb and C#, and Eb and F# have a natural third—the interval between a major third and a minor third. On the V-Synth, you can use Arabian temperament in the three keys of G, C and F.

<Example>

Note name	Equal temperament	Just Temperament (tonic C)	Arabian Scale
C	0	0	-6
C#	0	-8	+45
D	0	+4	-2
Eb	0	+16	-12
E	0	-14	-51
F	0	-2	-8
F#	0	-10	+43
G	0	+2	-4
G#	0	+14	+47
A	0	-16	0
Bb	0	+14	-10
B	0	-12	-49

Scale Tune C–B

Make scale tune settings.

Value: -100– +100

Modifying Waveforms (OSC1 / OSC2)

Oscillator Switch ◆

Switches the oscillator on / off.

Value: OFF, ON

OSC Type

Analog Oscillator

PCM Oscillator

Oscillator Type

Selects the type of oscillator.

By selecting “EXT IN,” the signal that is input through the rear panel INPUT jack can be used as an oscillator. This lets you play the externally input signal from the keyboard.

Value

ANALOG: Analog Oscillator

PCM: PCM Oscillator

EXT IN: External Input Oscillator

Wave Gain

Sets the gain (amplification) of the waveform.

Value: -12– +12 dB

Waveform (Analog Oscillator Waveform)

Selects the wave upon which the sound is to be based when using an analog oscillator.

Value

Waveform	Pulse Width (p. 44)	Fat (p. 44)
SAW: Sawtooth wave	O	O
SQR: Square wave	O	O
TRI: Triangle wave	O	O
SINE: Sine wave	O	O
RAMP: Ramp wave	O	O
JUNO: Modulated sawtooth wave	O	O
HQ-SAW: High quality sawtooth wave	X	X
HQ-SQR: High quality square wave	O	X
NOISE: Noise wave	O	X

O: effective X: ineffective

Impact (Analog Oscillator Impact)

Specifies the sharpness of the attack of the analog oscillator. Higher settings will produce a sharper attack.

Value: 0.0–4.0

Time Trip Sw (Time Trip Switch)

Selects whether Time Trip will operate (ON) or not (OFF).

Value: OFF, ON

Beat Keep (Time Trip Beat Keep)

After Time Trip is operated, this selects whether you will “chase” to the beat location where you otherwise would have been if Time Trip had not been operated (ON), or whether this “chase” will not occur (OFF).

Value: OFF, ON

Waveform (PCM Oscillator Waveform)

Selects the wave upon which the sound is to be based when using a PCM oscillator.

Value: 1–999 (wave number)

HINT

When you touch <List>, the Wave List window will appear, allowing you to select the wave from the list.

MEMO

When you select a wave, the wave name, encoding type, and stereo / mono will also be displayed.

Vari Sw (PCM Oscillator Vari Switch)

Switches whether the sound will be produced using Vari Phrase (ON) or linearly (OFF).

Value: OFF, ON

Start Offset (PCM Oscillator Start Offset)

Specifies the starting address of the wave.

Value: 0–**

Playback Mode (PCM Oscillator Playback Mode)

Specifies how the wave will be assigned to each key.

Value

RETRIGGER: The sample will play back from the beginning each time you play a key.

LEGATO: When you play legato, the playback point will be synchronized with the currently playing sound.

STEP: Each time you play a key, the sample will play back to the next event (p. 71) and then stop.

EVENT: The sample will be divided at each event and assigned to separate keys. Each time you press a key, the sample will play from the beginning of the corresponding event.

Loop (PCM Oscillator Loop Switch)

Specifies whether the wave will be played as a loop (ON) or not (OFF).

Value: OFF, ON

Robot Voice (PCM Oscillator Robot Voice Switch)

Specifies whether the pitch of the wave will be held steady (ON) or not (OFF).

Value: OFF, ON

Tempo Sync (PCM Oscillator Tempo Sync Switch)

Specifies whether the wave will be sounded in sync with the tempo clock (ON) or not (OFF).

Value: OFF, ON

Pitch

Pitch (Oscillator Pitch) ★◆

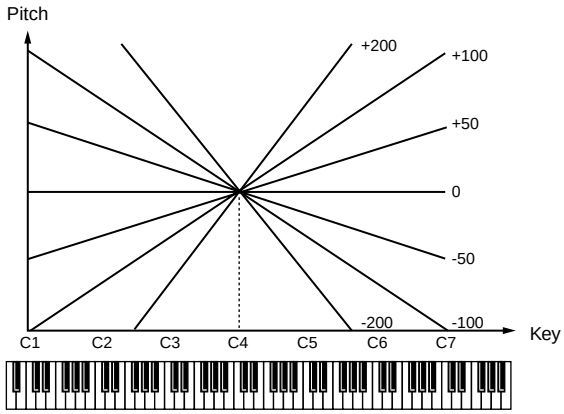
Adjusts the pitch of the oscillator.

Value: -63– +63

Pitch KF (Oscillator Pitch Key Follow)

This specifies the amount of pitch change that will occur when you play a key one octave higher (i.e., 12 keys upward on the keyboard). If you want the pitch to rise one octave as on a conventional keyboard, set this to "+100." If you want the pitch to rise two octaves, set this to "+200." Conversely, set this to a negative value if you want the pitch to fall. With a setting of "0," all keys will produce the same pitch.

Value: -200– +200



Coarse (Oscillator Coarse Tune)

Adjusts the pitch of the oscillator up or down in semitone steps (+/-4 octaves).

Value: -48– +48

Fine (Oscillator Fine Tune)

Adjusts the pitch of the oscillator up or down in 1-cent steps (+/-50 cents).

Value: -50– +50

MEMO

One cent is 1/100th of a semitone.

Random (Oscillator Random Pitch Depth)

This specifies the width of random pitch deviation that will occur each time a key is pressed. If you do not want the pitch to change randomly, set this to "0." These values are in units of cents (1/100th of a semitone).

Value: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200

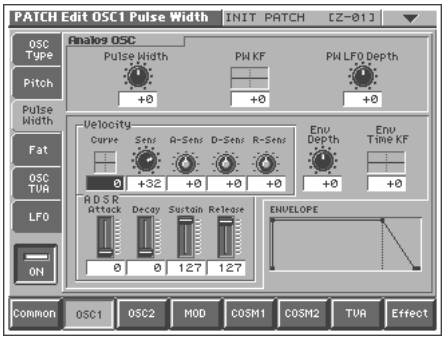
Pit LFO Dp (Oscillator Pitch LFO Depth) ★◆

Specifies how deeply the LFO will affect pitch.

Value: -63– +63

In this screen you can make settings for the envelope that affects the pitch. For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).

Pulse Width (ANALOG)



Pulse Width ★◆

Specifies the amount by which the wave shape will be modified.

Value: -63– +63

PW KF (Pulse Width Key Follow)

Specifies the amount by which the pulse width value will be affected by the key you play.

Value: -200– +200

PW LFO Depth (Pulse Width LFO Depth) ★◆

Specifies how deeply the LFO will affect pulse width.

Value: -63– +63

☞ In this screen you can make settings for the envelope that affects the pulse width. For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).

Fat (ANALOG)

Fat ★◆

Emphasizes the low-frequency region of the sound.

Value: 0–127

Fat KF (Fat Key Follow)

Specifies the amount by which the fat value will be affected by the key you play.

Value: -200– +200

Fat LFO Depth ★◆

Specifies how deeply the LFO will affect fat.

Value: -63– +63

☞ In this screen you can make settings for the envelope that affects the fat. For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).

Time (PCM)

Time ★◆

This sets the range of change in playback speed (time).

Value: -63– +63

<How the Time parameter is related to playback speed>

Time	-40	-20	0	20	40
FWD	Reverse playback	Stop	Normal speed	2x speed	4x speed
ZERO	-2x speed	Reverse playback	Stop	Normal speed	2x speed
BWD	4x speed	-2x speed	Reverse playback	Stop	Normal speed

Time KF (Time Key Follow)

Specifies the amount by which the time value will be affected by the key you play.

Value: -200– +200

Time Offset

Specifies the basic speed for a time value of "0".

Value

BWD: Specifies a backward direction.

ZERO: Specifies a pause.

FWD: Specifies a forward direction.

Time LFO Depth ★◆

Specifies how deeply the LFO will affect time.

Value: -63– +63

☞ In this screen you can make settings for the envelope that affects the time. For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).

Formant (PCM)

NOTE

The parameters of this screen are ignored when the Vari switch (p. 42) is off and when the Encode Type (p. 70) is "BACKING" or "ENSEMBLE."

Formant ★◆

This sets the range of change in vocal quality (formant).

Value: -63– +63

Formant KF (Formant Key Follow)

Specifies the amount by which the formant value will be affected by the key you play.

Value: -200– +200

Energy

Specifies how much the fundamental pitch will be emphasized in order to make the sound more well-defined. Set this to "OFF" if you do not want to use the Energy parameter.

Value: OFF, 1–127

Fmt LFO Depth (Formant LFO Depth) ★◆

Specifies how deeply the LFO will affect formant.

Value: -63– +63

☞ In this screen you can make settings for the envelope that affects the formant. For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).

OSC TVA

Level ★◆

Specifies the volume of the oscillator.

Value: 0–127

Level KF (Level Key Follow)

Use this parameter if you want the volume of the oscillator to change according to the key that is pressed. Relative to the volume at the C4 key (center C), positive (+) settings will cause the volume to rise for notes higher than C4, and negative (-) settings will cause the volume to fall for notes higher than C4. Larger settings will produce greater change.

Value: -200– +200

Level LFO Dp (Level LFO Depth) ★

Specifies how deeply the LFO will affect the volume of the oscillator.

Value: -63– +63

☞ In this screen you can make settings for the envelope that affects the sub TVA. For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).

LFO

☞ In this screen you can make settings for the LFO that affects the oscillator. For details on LFO settings, refer to **"Making LFO Settings"** (p. 49).

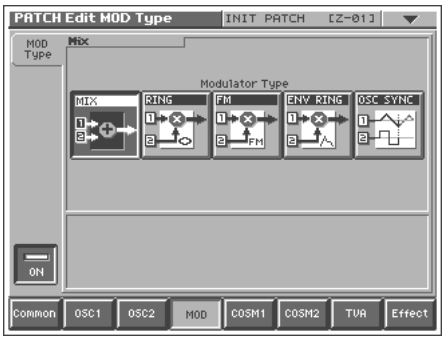
Mixing/Modulating Two Sounds (Mod)

Modulator Switch ◆

Switches the modulator on/off.

Value: OFF, ON

Mod Type



Modulator Type

Selects the type of modulator.

Value

MIX: Add OSC1 and OSC2.

RING: Use OSC2 to apply ring modulation to OSC1.

FM: Use OSC2 to apply FM (frequency modulation) to OSC1.

ENV RING: Use the envelope of OSC2 to control the volume of OSC1.

OSC SYNC: Synchronize the output waveform of OSC1 to the output waveform of OSC2.

NOTE

OSC SYNC is valid only when OSC2 is an analog oscillator.

Original Level (Modulator Original Level)

Specifies the volume for the original sound of OSC1.

Value: 0–127

MEMO

This can be set if Modulator Type is set to “RING” or “FM.”

Attack (Modulator Attack Time)

Specifies the attack time of the OSC2 envelope.

Value: 0–127

MEMO

This can be set if Modulator Type is set to “ENV RING.”

Release (Modulator Release Time)

Specifies the release time of the OSC2 envelope.

Value: 0–127

MEMO

This can be set if Modulator Type is set to “ENV RING.”

Applying Various Effects to Each Note You Play (COSM1/COSM2)

COSM Switch ◆

Switches the COSM on/off.

Value: OFF, ON

COSM Type

COSM Type

Use this parameter to select from among the 15 available COSMs. For details on COSM parameters, refer to **“COSM Parameters”** (p. 111).

Value: THRU, OD/DS, W-SHAPE, AMP, SPEAKER, RESONATOR, SBF1/2, COMB, DUAL, TVF, DYN-TVF, COMP, LIMITER, F-SHIFT, LO-FI

LFO

For some COSM selections that you choose in COSM Type, you can make LFO settings. For details on LFO settings, refer to **“Making LFO Settings”** (p. 49).

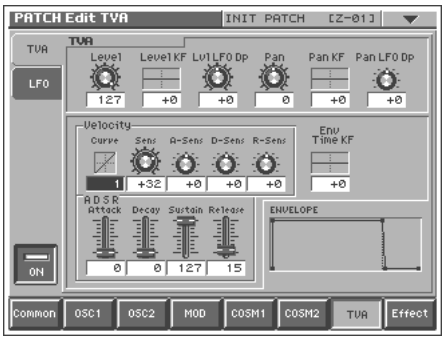
Adjusting the Volume and Pan (TVA)

TVA Switch ◆

Switches the TVA on / off.

Value: OFF, ON

TVA



Level ★

Specifies the volume of the patch.

Value: 0–127

Level KF (Level Key Follow)

Use this parameter if you want the volume of the patch to change according to the key that is pressed. Relative to the volume at the C4 key (center C), positive (+) settings will cause the volume to rise for notes higher than C4, and negative (-) settings will cause the volume to fall for notes higher than C4. Larger settings will produce greater change.

Value: -200– +200

Lvl LFO Dp (Level LFO Depth) ★

Specifies how deeply the LFO will affect the volume of the patch.

Value: -63– +63

Pan

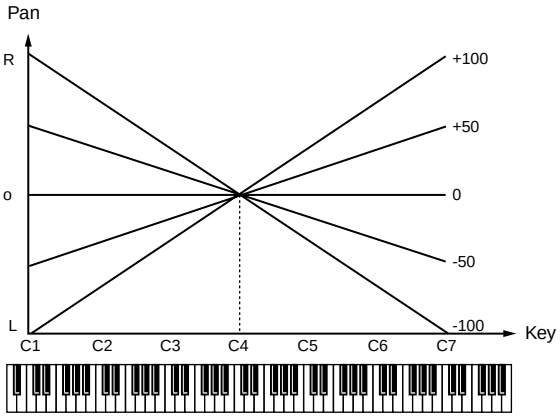
Specifies the pan of the patch. “L64” is far left, “0” is center, and “63R” is far right.

Value: L64–0–63R

Pan KF (Pan Key Follow)

Use this parameter if you want key position to affect panning. Positive (+) settings will cause notes higher than C4 key (center C) to be panned increasingly further toward the right, and negative (-) settings will cause notes higher than C4 key (center C) to be panned toward the left. Larger settings will produce greater change.

Value: -200– +200



Pan LFO Dp (Pan LFO Depth) ★

Specifies how deeply the LFO will affect the pan.

Value: -63– +63

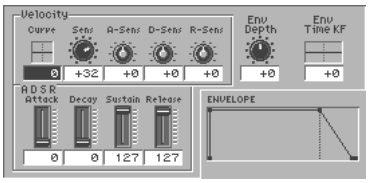
☞ In this screen you can make settings for the envelope that affects the TVA. For details on envelope settings, refer to **“Making Envelope Settings”** (p. 48).

LFO

☞ In this screen you can make settings for the LFO that affects the TVA. For details on LFO settings, refer to **“Making LFO Settings”** (p. 49).

Making Envelope Settings

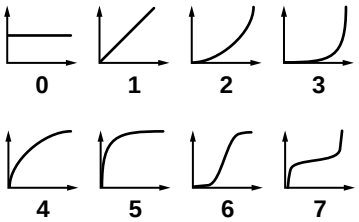
This section explains the envelope setting screens.



Velocity Curve (Envelope Velocity Curve)

Choose from the following seven curves to specify how your keyboard playing strength will affect the envelope depth. If you don't want your keyboard playing strength to affect the envelope depth, set this to "0".

Value: 0–7



Velocity Sens (Envelope Velocity Sensitivity)

Keyboard playing dynamics can be used to control the depth of the envelope. If you want the envelope to have more effect for strongly played notes, set this parameter to a positive (+) value. If you want the pitch envelope to have less effect for strongly played notes, set this to a negative (-) value.

Value: -63– +63

Velocity A-Sens (Envelope Attack Time Velocity Sensitivity)

This allows keyboard dynamics to affect the attack time of the envelope. If you want attack time to be speeded up for strongly played notes, set this parameter to a positive (+) value. If you want it to be slowed down, set this to a negative (-) value.

Value: -63– +63

Velocity D-Sens (Envelope Decay Time Velocity Sensitivity)

This allows keyboard dynamics to affect the decay time of the envelope. If you want decay time to be speeded up for strongly played notes, set this parameter to a positive (+) value. If you want it to be slowed down, set this to a negative (-) value.

Value: -63– +63

Velocity R-Sens (Envelope Release Time Velocity Sensitivity)

The parameter to use when you want key release speed to control the release time value of the envelope. If you want release time to be speeded up for quickly released notes, set this parameter to a positive (+) value. If you want it to be slowed down, set this to a negative (-) value.

Value: -63– +63

ADSR Attack (Envelope Attack Time) ★◆

Specifies the attack time of the envelope (the time from when you press a key until the envelope level reaches the maximum value).

Value: 0–127, Note

ADSR Decay (Envelope Decay Time) ★◆

Specifies the decay time of the envelope (the time from when the envelope level reaches the maximum value until it falls to a constant value).

Value: 0–127, Note

ADSR Sustain (Envelope Sustain Level) ★

Specifies the sustain level of the envelope (the level at which the envelope remains constant).

Value: 0–127

ADSR Release (Envelope Release Time) ★◆

Specifies the release time of the envelope (the time from when you release a key until the envelope level reaches 0).

Value: 0–127, Note

MEMO

"ENVELOPE" in the lower right of the screen shows a graphical representation of the envelope produced by the current settings.

Env Depth (Envelope Depth)

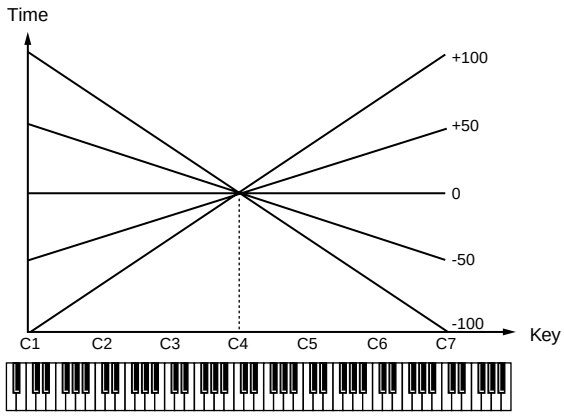
Specifies the depth of the envelope. Higher settings will cause the envelope to produce greater change. Negative (-) settings will invert the shape of the envelope.

Value: -63– +63

Env Time KF (Envelope Time Key Follow)

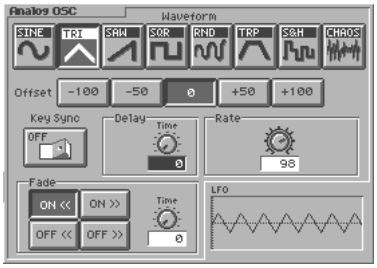
Make this setting when you want the decay time and subsequent times of the envelope to be affected by the location of the key you play. Based on the envelope times for the C4 key (center C), positive (+) settings will cause notes higher than C4 to have increasingly shorter times, and negative (-) settings will cause them to have increasingly longer times. Larger settings will produce greater change.

Value: -200– +200



Making LFO Settings

This section explains the LFO setting screens.



Waveform (LFO Waveform)

Selects the waveform of the LFO.

Value

SIN: Sine wave

TRI: Triangle wave

SAW: Sawtooth wave

SQR: Square wave

RND: Random wave

TRP: Trapezoidal wave

S&H: Sample & Hold wave (one time per cycle, LFO value is changed)

CHAOS: Chaos wave

MEMO

"LFO" in the lower right of the screen shows a wave graphic that corresponds to the current settings.

Offset (LFO Offset)

Raises or lowers the LFO waveform relative to the central value. Positive (+) settings will move the waveform so that modulation will occur from the central value upward. Negative (-) settings will move the waveform so that modulation will occur from the central value downward.

Value: -100, -50, 0, +50, +100

Key Sync (LFO Key Sync Switch)

This specifies whether the LFO cycle will be synchronized to begin when the key is pressed (ON) or not (OFF).

Value: OFF, ON

Delay Time (LFO Delay Time)

Delay Time (LFO Delay Time) specifies the time elapsed before the LFO effect is applied (the effect continues) after the key is pressed (or released).

Value: 0–127

After referring to **"How to Apply the LFO"** (p. 49), change the setting until the desired effect is achieved.

Rate (LFO Rate) ★◆

Adjusts the modulation rate, or speed, of the LFO.

Value: 0–127, Note

LFO Rate sets the beat length for the synchronized tempo when the tempo that specifies the LFO cycle (Patch Tempo) is synchronized with the tempo set in a external sequencer.

(Example)

For a tempo of 120 (120 quarter notes occur in 1 minute (60 seconds))

Setting	Delay time
𝅗𝅥 (half note)	1 second (60 / 60 =1 (second))
♩ (quarter note)	0.5 seconds (60 / 120= 0.5 (seconds))
♪ (eighth note)	0.25 seconds (60 / 240= 0.25 (seconds))

NOTE

This setting will be ignored if the Waveform parameter is set to "CHAOS."

MEMO

"LFO" in the lower right of the screen shows a diagram of the wave cycle that corresponds to the current settings.

Fade Mode (LFO Fade Mode)

Specifies how the LFO will be applied.

Value: ON <<, ON >>, OFF <<, OFF >>

After referring to **"How to Apply the LFO"** (p. 49), change the setting until the desired effect is achieved.

Fade Time (LFO Fade Time)

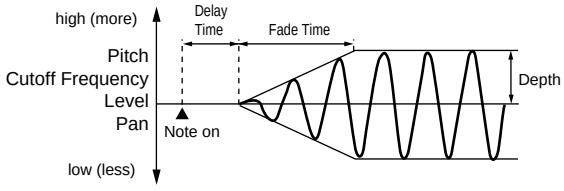
Specifies the time over which the LFO amplitude will reach the maximum (minimum).

Value: 0–127

After referring to **"How to Apply the LFO"** (p. 49), change the setting until the desired effect is achieved.

How to Apply the LFO

● Apply the LFO gradually after the key is pressed

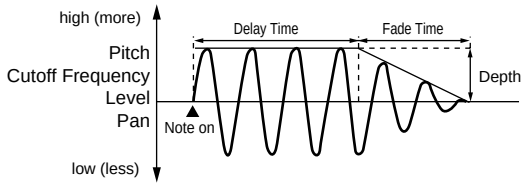


Fade Mode: ON <

Fade Time: The time over which the LFO amplitude will reach the maximum after the Delay Time has elapsed.

Delay Time: The time from when the keyboard is played until the LFO begins to be applied.

● Apply the LFO immediately when the key is pressed, and then gradually begin to decrease the effect

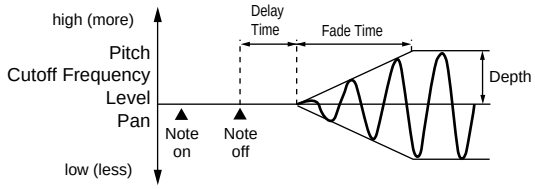


Fade Mode: ON >>

Fade Time: The time over which the LFO amplitude will reach the minimum after the Delay Time has elapsed.

Delay Time: The time that the LFO will continue after the keyboard is played.

● Apply the LFO gradually after the key is released

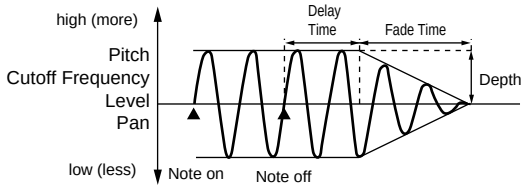


Fade Mode: OFF <<

Fade Time: The time over which the LFO amplitude will reach the maximum after the Delay Time has elapsed.

Delay Time: The time from when the keyboard is released until the LFO begins to be applied.

● Apply the LFO from when the key is pressed until it is released, and gradually begin to decrease the effect when the key is released



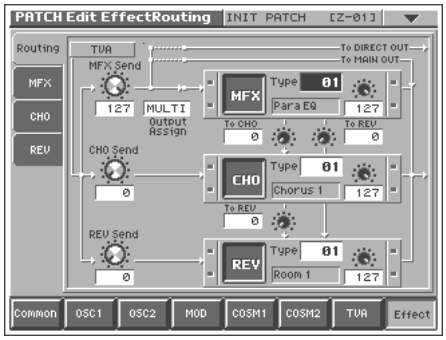
Fade Mode: OFF >>

Fade Time: The time over which the LFO amplitude will reach the minimum after the Delay Time has elapsed.

Delay Time: The time that the LFO will continue after the keyboard is released.

Setting Effects for a Patch (Effect)

Routing



MFX Send (MFX Send Level) ★

Sets the level of the signal sent to tMFX.

Value: 0–127

CHO Send (Chorus Send Level) ★

Sets the level of the signal sent to chorus.

Value: 0–127

REV Send (Reverb Send Level) ★

Sets the level of the signal sent to reverb.

Value: 0–127

Output Assign

Sets the direct sound's output method.

Value

MULTI: Output in stereo through MFX. You can also apply chorus or reverb to the sound that passes through MFX.

MAIN: Output to the MAIN OUT jacks in stereo without passing through MFX.

DIR: Output to the DIRECT OUTjacks in stereo without passing through MFX. Make this setting when you want to use external effects.

MFX (MFX On/Off Switch) ◆

Switches MFX on and off.

Value: MFX (OFF), MFX (ON)

MFX Type

Use this parameter to select from among the 41 available MFX. For details on MFX parameters, refer to **"MFX Parameters"** (p. 116).

Value: 00 (Thru)–41

MFX Master Level

Adjusts the volume of the sound that has passed through the MFX.

Value: 0–127

MFX To CHO (MFX Chorus Send Level)

Adjusts the amount of chorus for the sound that passes through MFX. If you don't want to add the Chorus effect, set it to "0."

Value: 0–127

MFX To REV (MFX Reverb Send Level)

Adjusts the amount of reverb for the sound that passes through MFX. If you don't want to add the Reverb effect, set it to "0."

Value: 0–127

CHO (Chorus On/Off Switch) ◆

Switches chorus on and off.

Value: CHO (OFF), CHO (ON)

CHO Type (Chorus Type)

Use this parameter to select from among the 8 available chorus. For details on chorus parameters, refer to **"Chorus Parameters"** (p. 138).

Value: 00 (Off)–08

CHO Master Level (Chorus Master Level)

Adjusts the volume of the sound that has passed through chorus.

Value: 0–127

CHO To REV (Chorus Reverb Send Level)

Adjusts the amount of reverb for the sound that passes through chorus. If you don't want to add the Reverb effect, set it to "0."

Value: 0–127

REV (Reverb On/Off Switch) ◆

Switches reverb on and off.

Value: REV (OFF), REV (ON)

REV Type (Reverb Type)

Use this parameter to select from among the 10 available reverb. For details on reverb parameters, refer to **"Reverb Parameters"** (p. 138).

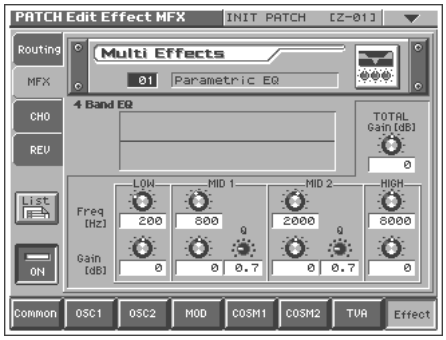
Value: 00 (Off)–10

REV Master Level (Reverb Master Level)

Adjusts the volume of the sound that has passed through reverb.

Value: 0–127

MFX



MFX Type

Use this parameter to select from among the 41 available MFX. For details on MFX parameters, refer to **"MFX Parameters"** (p. 116).

Value: 00 (Thru)–41

In this setting screen, you can edit the parameters of the MFX that is selected by the MFX Type setting. For details on the parameters that can be edited, refer to **"MFX Parameters"** (p. 116).

HINT

When you touch <List>, the MFX List window will appear, allowing you to select the MFX from the list.

CHO

CHO Type (Chorus Type)

Use this parameter to select from among the 8 available chorus. For details on chorus parameters, refer to **"Chorus Parameters"** (p. 138).

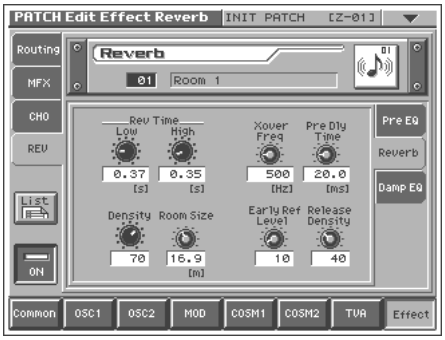
Value: 00 (Off)–08

In this setting screen, you can edit the parameters of the chorus that is selected by the CHO Type setting. For details on the parameters that can be edited, refer to **"Chorus Parameters"** (p. 138).

HINT

When you touch <List>, the Chorus List window will appear, allowing you to select the chorus from the list.

REV



REV Type (Reverb Type)

Use this parameter to select from among the 10 available reverb. For details on reverb parameters, refer to **"Reverb Parameters"** (p. 138).

Value: 00 (Off)–10

In this setting screen, you can edit the parameters of the reverb that is selected by the REV Type setting. For details on the parameters that can be edited, refer to **"Reverb Parameters"** (p. 138).

HINT

When you touch <List>, the Reverb List window will appear, allowing you to select the reverb from the list.

Zone Settings (Zone)

V-Synth lets you divide the keyboard into as many as sixteen zones, with each zone playing a different sound.

MEMO

The following patch settings are applied in common to each of the individual sounds that are divided by zone.

- Common group settings (except for Structure Type)
- Effect group settings for MFX, Chorus, and Reverb type, and effect settings

Splitting the Keyboard to Play Different Sounds (Split)

A patch that contains settings to play different patches in each keyboard zone is called a **split patch**. Here's how to create a split patch.

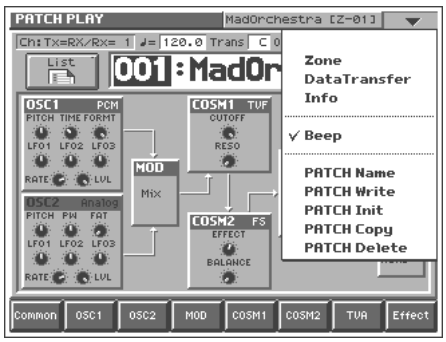
1. **Access the PATCH PLAY screen, and select the patch whose settings you wish to modify (p. 21).**

HINT

If you want to create all your patches from the ground up, rather than the patches that have already been prepared, carry out the **Initialize** operation (p. 33).

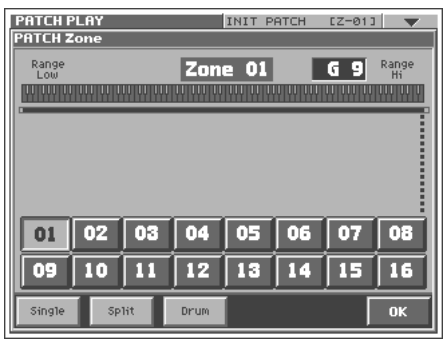
2. **Touch <▼> in the upper right of the screen.**

A pulldown menu appears.



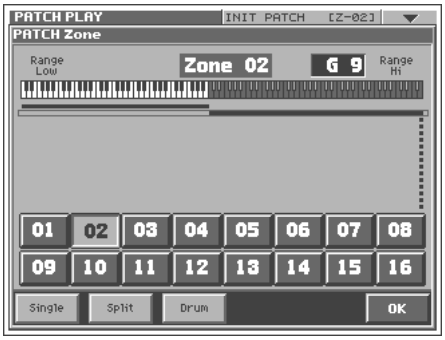
3. **In the pulldown menu, touch <Zone>.**

The PATCH Zone window appears.



4. In the lower part of the screen, touch <Split>.

A window like the following appears.



5. Touch <01>.

Zone 01 will be selected, and the top note number of zone 01 will be displayed in the upper right of the screen.

6. Specify the split point between zones 01 and 02. Either turn the VALUE dial or use [INC/+][DEC/-] to specify the note number. You can also specify the note number by dragging to left or right on the keyboard graphic in the touch screen.

HINT

If you want to divide the keyboard into three zones, lower the top note of zone 02, and specify the split point between zones 02 and 03. By lowering the top note of the highest zone in this way, you can add more zones. You can specify a maximum of sixteen zones.

7. Touch <OK>.

The zones will be established, and you will return to the PATCH PLAY screen.

8. In this state, zone 01 is selected. Specify the sound that you want to play in zone 01.

9. After you have specified the sound that you want to play in zone 01, next specify the sound for zone 02. Perform steps 2 and 3 once again to access the PATCH Zone window.

10. Touch <02>, and then touch <OK>.

Zone 02 will be selected, and you will return to the PATCH PLAY screen.

11. Since zone 02 is now selected, specify the sound that you want to play in zone 02.

In this way you can create a patch that plays different sounds on either side of the split point you specified in step 6.

12. To save the patch you created, perform the Write operation (p. 34).

Creating a Drum Patch (Drum)

By dividing the keyboard into sixteen zones and assigning a percussion instrument sound to each zone, you can create a patch that lets you play drums. Such a patch is called a **drum patch**.
You can think of a drum patch as a group containing various percussion instrument sounds. Since percussion instrument sounds are not usually used to play melodies, you do not need to be able to use the keyboard to play a scale.

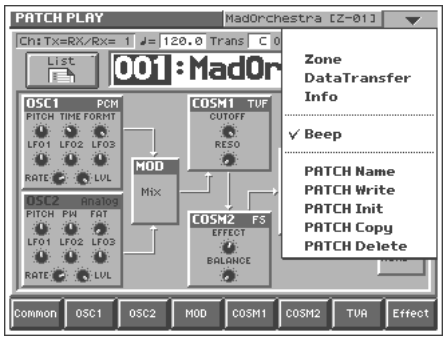
1. Access the PATCH PLAY screen, and select the patch whose settings you wish to modify (p. 21).

HINT

If you want to create all your patches from the ground up, rather than the patches that have already been prepared, carry out the **Initialize** operation (p. 33).

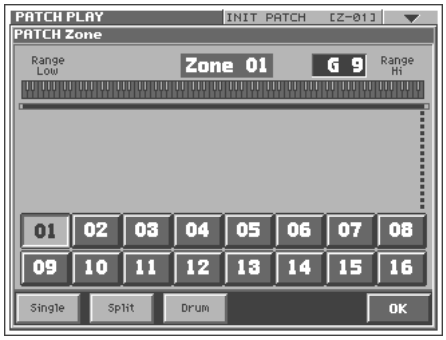
2. Touch <▼> in the upper right of the screen.

A pulldown menu appears.



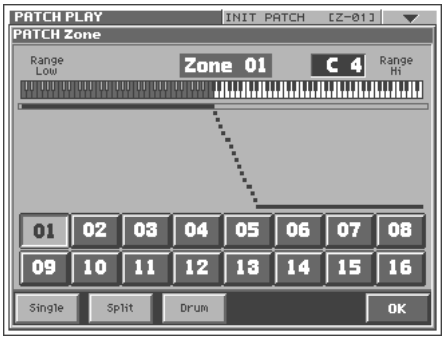
3. In the pulldown menu, touch <Zone>.

The PATCH Zone window appears.



4. In the lower part of the screen, touch <Drum>.

A window like the following appears.



5. To change the split point of each zone, refer to the procedure described in the preceding section, "Splitting the Keyboard to Play Different Sounds (Split)."

6. Specify the sounds (percussion instrument sounds) that you want to play in each zone. For the procedure, refer to the procedure described in the preceding section, "Splitting the Keyboard to Play Different Sounds (Split)."

In this way you can create a patch that plays various percussion instrument sounds when you press different notes of the keyboard.

7. To save the patch you created, perform the Write operation (p. 34).

Creating and Editing Samples (Sample Mode)

In this chapter, we will explain the procedures for:

- Sampling (p. 55)
- Editing samples (p. 64)
- Converting samples so the VariPhrase function can be used (Encoding) (p. 69)

☞ For details on loading samples, refer to (p. 85).

Sampling

Settings Before You Sample (What Is a Template?)

A sampling template is something that holds a collection of settings for sampling (the setup settings, pre-effect settings, and metronome settings described below).

You can store eight different sampling templates. When you sample, you will always select one of these eight templates.

With the factory settings, eight sampling templates are preset.

☞ For details on modifying the settings, refer to **"Sampling Procedure"** (p. 56).

MEMO Sampling templates are system settings (with the exception of some metronome parameters). They are remembered even when you turn off the power. If you wish to restore all eight sampling templates to the factory settings, perform the Factory Reset operation (p. 98).

Applications of Each Template

The preset templates cover different input settings and pre-effect types.

Mic	Sample in mono from a mic. Connect a mic to the rear panel INPUT jack, and set GAIN switch to "MIC."
Line	Sample in stereo from a CD. Connect your CD player to the rear panel INPUT jacks, and set GAIN switch to "LINE."
Optical	Sample a digital signal. Connect your audio device to the rear panel OPTICAL IN connector.
Resampl	Play a sample on the V-Synth and sample the result. This is called "resampling." For details on resampling, refer to p. 60.
Comp	Use the compressor pre-effect. The sample will be recorded from the rear panel INPUT jacks.
Limiter	Use the limiter pre-effect. The sample will be recorded from the rear panel INPUT jacks.
Noise-Sup	Use the noise suppressor pre-effect. The sample will be recorded from the rear panel INPUT jacks.
MIDI	Start sampling when a sequencer start (system realtime message: FA) is received. The sample will be recorded from the rear panel INPUT jacks.

Factory Settings of Each Template

Setup	Mic	Line	Optical	Resampl
SamplingType	1 (MIX)	0 (Stereo)	0 (Stereo)	0 (Stereo)
InputSource	0 (Analog)	0 (Analog)	1 (Optical)	3 (Resampling)
TriggerMode	0 (Manual)	2 (Level)	2 (Level)	3 (Note)
TriggerLevel	-12 (dB)	-12 (dB)	-24 (dB)	-12 (dB)
PreTrigger	0 (0msec)	0 (0msec)	0 (0msec)	0 (0msec)
PreGain	0 (0dB)	0 (0dB)	0 (0dB)	0 (0dB)
PreFxType	0 (off)	0 (off)	0 (off)	0 (off)
PreFxCS-Sus	0	0	0	0
PreFxCS-Atk	0	0	0	0
PreFxCS-Tone	0	0	0	0
PreFxCS-Lvl	0	0	0	0
PreFxLM-Thr	-48	-48	-48	-48
PreFxLM-Rel	0	0	0	0
PreFxLM-Rati	0	0	0	0
PreFxLM-Tone	0	0	0	0
PreFxLM-Lvl	0	0	0	0
PreFxNS-Thr	-60	-60	-60	-60
PreFxNS-Rel	0	0	0	0
CountIN	1 (1MES)	0 (0MES)	0 (0MES)	1 (1MES)
MetroType	1 (REC)	1 (REC)	1 (REC)	1 (REC)

Setup	Comp	Limiter	NoiseSup	MIDI
SamplingType	0 (Stereo)	0 (Stereo)	0 (Stereo)	0 (Stereo)
InputSource	0 (Analog)	0 (Analog)	0 (Analog)	0 (Analog)
TriggerMode	0 (Manual)	0 (Manual)	0 (Manual)	1 (MIDI)
TriggerLevel	-12 (dB)	-12 (dB)	-12 (dB)	-12 (dB)
PreTrigger	0 (0msec)	0 (0msec)	0 (0msec)	0 (0msec)
PreGain	0 (0dB)	0 (0dB)	0 (0dB)	0 (0dB)
PreFxType	1 (COMP)	2 (LIMIT)	3 (NS)	0 (off)
PreFxCS-Sus	64	0	0	0
PreFxCS-Atk	12	0	0	0
PreFxCS-Tone	0	0	0	0
PreFxCS-Lvl	0	0	0	0
PreFxLM-Thr	-48	-36	-48	-48
PreFxLM-Rel	0	80	0	0
PreFxLM-Rati	0	2	0	0
PreFxLM-Tone	0	0	0	0
PreFxLM-Lvl	0	0	0	0
PreFxNS-Thr	-60	-60	-30	-60
PreFxNS-Rel	0	0	22	0
CountIN	1 (1MES)	1 (1MES)	1 (1MES)	0 (0MES)
MetroType	1 (REC)	1 (REC)	1 (REC)	1 (REC)

Sampling Procedure

Here's how to input a sound from the input jacks and sample it. For resampling, refer to the following section.

The V-Synth has the following input jacks.

- INPUT L, R (GAIN: MIC / LINE)
- DIGITAL AUDIO INTERFACE
  - OPTICAL IN
  - COAXIAL IN

Use the input jack that is appropriate for your situation.

- Monaural sampling from a mic → INPUT L, R (GAIN: MIC)
- Sampling from an analog source → INPUT L, R (GAIN: LINE)
- Sampling from a digital source → OPTICAL IN or COAXIAL IN

NOTE

Howling could be produced depending on the location of microphones relative to speakers. This can be remedied by:

1. Changing the orientation of the microphone(s).
2. Relocating microphone(s) at a greater distance from speakers.
3. Lowering volume levels.

When sampling, you must make sure that the following two items are set correctly. If these two settings are incorrect, the sample will not be recorded as you intend.

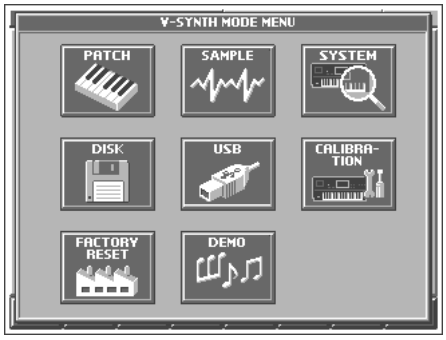
- What type of sample are you recording? (stereo or mono)
  → In the SAMPLING General screen, set Sampling Type.
- Which input are you sampling from? (select the input jack)
  → In the SAMPLING General screen, set Input Source.

MEMO

If you have set the metronome (p. 62), the metronome sound will be output from the DIRECT OUT jack during sampling. However, the sound that is assigned to the DIRECT OUT jack (p. 50) will not be output.

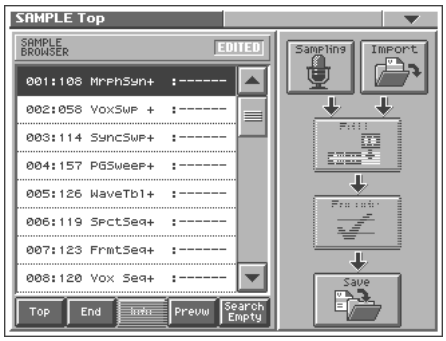
1. Press [MODE].

The V-SYNTH MODE MENU window appears.



2. Touch <SAMPLE>.

The SAMPLE Top screen appears.



3. Select the location (sample number) that you wish to sample.

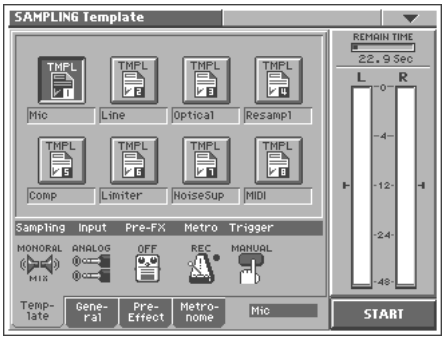
Move the cursor to the desired sample. Normally, you will select a sample that has no wave; i.e., a sample number whose name is "NO SAMPLE."

In this screen you can use the following functions.

- Select a sample by directly touching it.
- Change the number in steps of eight by pressing [◄][►].
- Change the number in steps of one by touching <▲><▼> located beside the sample list, by pressing [▲][▼][INC/+][DEC/-], or by turning the VALUE dial.
- Scroll the sample list by dragging the scroll bar located beside the sample list up or down.
- Move to the number 001 sample by touching <Top>.
- Move to the number 999 sample by touching <End>.
- Display information on the currently selected sample by touching <Info> (p. 63). However, this information will not be displayed for the factory-set waves.
- Audition the currently selected sample by touching <Prevw>.
- When you touch <Search Empty>, you will jump to the "NO SAMPLE" sample number that follows the current sample number.

4. Touch <Sampling>.

The SAMPLING Template screen appears.



5. Touch <TMPL 1>–<TMPL 8> to select a sampling template.

If you want to modify the settings of the selected sampling template, perform the following steps 6–8.

6. Touch one of the tabs displayed at the bottom of the screen to access the corresponding setting screen.

<General>: Setup settings (p. 60)

<Pre-Effect>: Pre-effect settings (p. 61)

<Metronome>: Metronome settings (p. 62)

☞ For details on each parameter, refer to the page references given.

7. In each setting screen, touch the touch panel to set the parameters.

☞ For details on operations in the touch panel, refer to **"Basic Touch Screen Operation"** (p. 19).

8. To set the value of a parameter, move the cursor to the value box of the parameter that you want to edit. Then adjust the value by turning the VALUE dial or by using [INC/+] [DEC/-]. You can also adjust the value by dragging on the touch screen.

9. Adjust the sampling level.

Adjust the volume of the device that is producing the sound.

When sampling from the INPUT jacks, adjust the level by turning the front panel INPUT knob or setting the rear panel GAIN switch.

If you are sampling from the DIGITAL AUDIO INTERFACE IN connector, use the setup Pre-gain (p. 61) or the pre-effect Output Level (p. 62) settings to adjust the level.

10. Touch <START> to start sampling.

The way in which sampling will start depends on the Trigger Mode setting in the SAMPLING General screen, as follows.

If "MANUAL" is selected, sampling will start after a count of the number of measures specified by the metronome Count-In setting.

If "MIDI" is selected, sampling will wait for the sequencer to start (system realtime message: FA). Sampling will begin when the sequencer start message is received.

If "LEVEL" is selected, sampling will wait for an input signal. Sampling will begin when the input signal exceeds the level specified by Trigger Level (p. 61).

If "NOTE" is selected, Sampling will begin when you play the keyboard or note message is received.

HINT

If you have selected "MIDI" or "LEVEL," you can touch <START> once again to begin sampling without waiting for the sequencer to start or the input signal to be received.

MEMO

In the SAMPLING window, "Remain Time" indicates the remaining time (in seconds) available for sampling.

NOTE

If memory becomes full, sampling will be halted. If this occurs, delete unneeded samples from memory (p. 60).

11. When you are finished sampling, touch <STOP>.

The display will indicate "COMPLETED!" Touch <PREVIEW> to hear the sound that you sampled, and check whether the sample was recorded as you wish.

12. Operations from this point will depend on what you want to do.

<Cancel>: Discard the sample that you just recorded, and return to the SAMPLING Template screen.

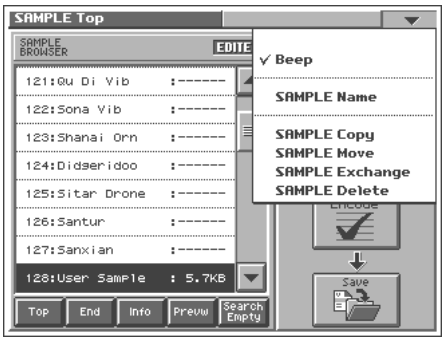
<Decide>: Finalize the sample that you just recorded, and register it in the sample list.

<RETRY>: Discard the sample that you just recorded, and sample once again.

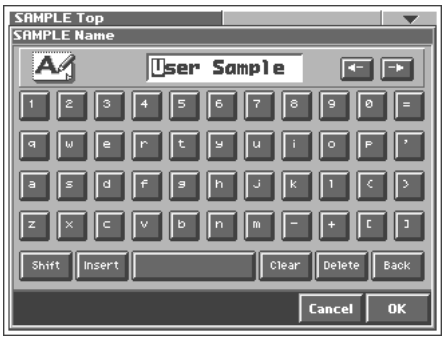
Naming a Sample (SAMPLE Name)

Assign a new name to the sample. You can assign a name consisting of up to twelve characters.

1. **Access the SAMPLE Top screen, and select the sample that you want to name (p. 56).**
2. **Touch <▼> in the upper right of the screen.**
   A pulldown menu appears.



3. **In the pulldown menu, touch <SAMPLE Name>.**
   The SAMPLE Name window appears.



4. **Touch the on-screen alphabetic or numeric keys to enter the new name in the text box.**
   The on-screen keys have the following functions.
   <←><→>: Move the cursor in the text box to the desired input location.
   <SHIFT>: Turn this on when you want to input uppercase letters or symbols.
   <Insert>: Turn this on when you want to insert a character at the cursor location.
   <Clear>: Erases all characters in the text box.
   <Delete>: Deletes the character at the cursor location.
   <Back>: Deletes the character that precedes the cursor location.

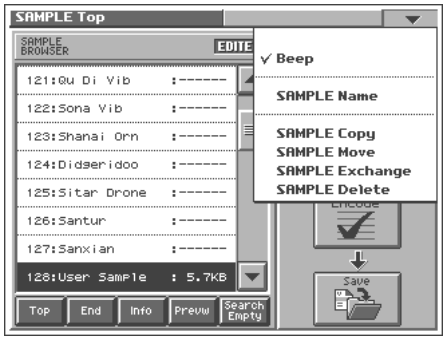
HINT

You can also move the input location cursor by pressing the [◄][►] cursor buttons. Pressing [▲] will change the character at the cursor location to uppercase, and pressing [▼] will change it to lowercase.

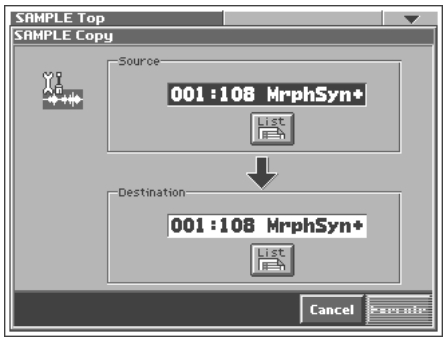
5. **When you have finished inputting, touch <OK> to finalize the sample name.**

Copying a Sample (SAMPLE Copy)

1. **Access the SAMPLE Top screen (p. 56).**
2. **Touch <▼> in the upper right of the screen.**
   A pulldown menu appears.



3. **In the pulldown menu, touch <SAMPLE Copy>.**
   The SAMPLE Copy window appears.



4. **Move the cursor to “Source” and select the copy-source sample.**
5. **Move the cursor to “Destination” and select the copy-destination sample.**

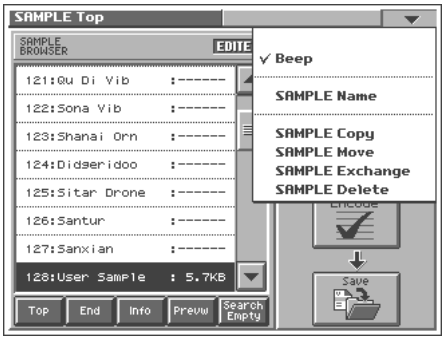
HINT

When you touch <List>, the Sample List window will appear, allowing you to select the sample from the list.

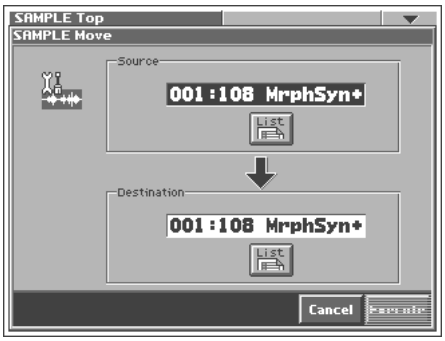
6. **Touch <Execute> to execute the copy operation.**
7. **Press [EXIT].**
   The SAMPLE Copy window closes.

Moving a Sample (SAMPLE Move)

1. **Access the SAMPLE Top screen (p. 56).**
2. **Touch <▼> in the upper right of the screen.**
   A pulldown menu appears.



3. **In the pulldown menu, touch <SAMPLE Move>.**
   The SAMPLE Move window appears.



4. **Move the cursor to "Source" and select the move-source sample.**
5. **Move the cursor to "Destination" and select the move-destination sample.**

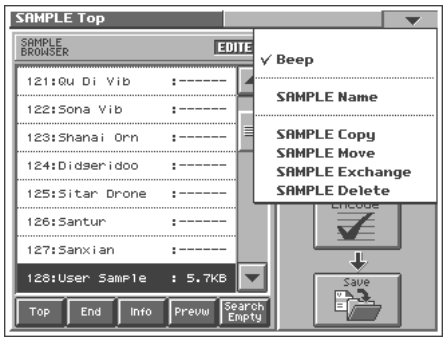
HINT

When you touch <List>, the Sample List window will appear, allowing you to select the sample from the list.

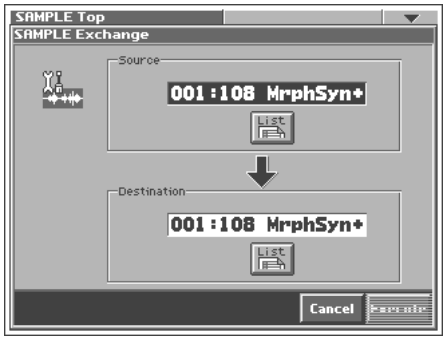
6. **Touch <Execute> to execute the move operation.**
7. **Press [EXIT].**
   The SAMPLE Move window closes.

Exchanging a Sample (SAMPLE Exchange)

1. **Access the SAMPLE Top screen (p. 56).**
2. **Touch <▼> in the upper right of the screen.**
   A pulldown menu appears.



3. **In the pulldown menu, touch <SAMPLE Exchange>.**
   The SAMPLE Exchange window appears.



4. **Move the cursor to "Source" and select the exchange-source sample.**
5. **Move the cursor to "Destination" and select the exchange-destination sample.**

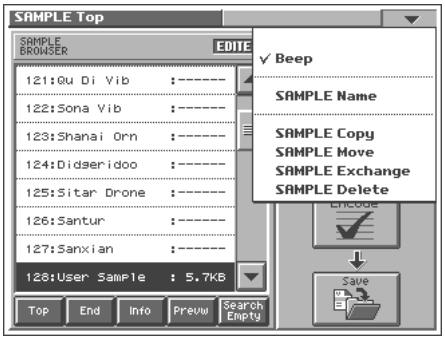
HINT

When you touch <List>, the Sample List window will appear, allowing you to select the sample from the list.

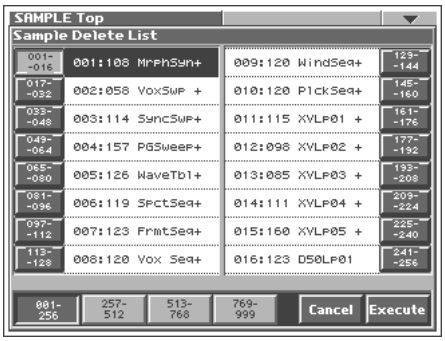
6. **Touch <Execute> to execute the exchange operation.**
7. **Press [EXIT].**
   The SAMPLE Exchange window closes.

Deleting a Sample (SAMPLE Delete)

1. **Access the SAMPLE Top screen (p. 56).**
2. **Touch <▼> in the upper right of the screen.**
   A pulldown menu appears.



3. **In the pulldown menu, touch <SAMPLE Delete>.**
   The SAMPLE Delete List window appears.



4. **From the list, select the sample that you want to delete.**
   Either turn the VALUE dial or use [INC/+][DEC/-] to select a patch. You can also select a patch by touching it on the display.

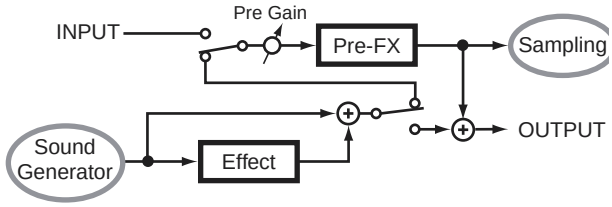
HINT

Each screen in the SAMPLE Delete List window shows a group of 16 samples. To view other samples, touch <017-032>–<241-256>, located at either side of the screen. To view higher-numbered samples, touch <257-512>–<769-999>, located at the bottom of the screen.

5. **Touch <Execute>.**
   The selected sample will be deleted.
6. **If you want to continue deleting other samples, repeat steps 4 and 5.**
7. **Press [EXIT].**
   The SAMPLE Delete List window closes.

Resampling

The V-Synth is able to resample samples from its internal memory. This is called **resampling**. In actuality, the sounds that are output from the rear panel MAIN OUT L(MONO), R jacks are sampled. For example, you could sample multiple samples played simultaneously, and record them as a single sample. You can conserve voices in this way.



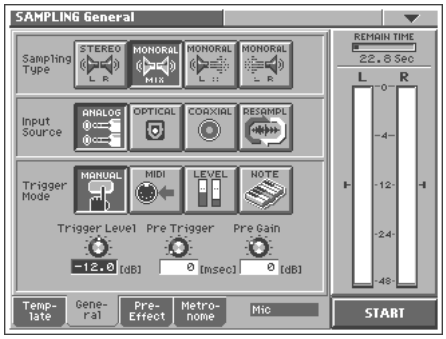
Before you enter Resampling mode, make settings so that you can play the sample(s) you wish to resample.

The resampling procedure is essentially the same as the “Sampling Procedure” described in the preceding section. However, please be aware of the following points.

- You must set the Input Source in the SAMPLING General screen to “RESAMPL.”
- To adjust the sampling level, adjust the setup Pre-gain (p. 61) and the pre-effect Output Level (p. 61).

Setup Settings

SAMPLING General



Sampling Type

Select the type of sampling.

Value

STEREO L R: Sample in stereo.

MONORAL MIX: Mix the signals input to L and R, and sample in monaural.

MONORAL L: Sample the L input signal in monaural.

MONORAL R: Sample the R input signal in monaural.

Input Source

Select the input from which the sound will be sampled.

Value

ANALOG: INPUT jacks

OPTICAL: OPTICAL IN connector

COAXIAL: COAXIAL IN connector

RESAMPL: Select this when you wish to resample. The sound that is output to MAIN OUT L(MONO) and R will be sampled.

Trigger Mode

Specifies how sampling will be started.

Value

MANUAL: Sampling will begin when you touch <START>.

MIDI: Sampling will begin when an external sequencer start message (system realtime message: FA) is received.

LEVEL: Sampling will start when the input signal exceeds the level specified by the Trigger Level setting.

NOTE: Sampling will begin when you play the keyboard or note message is received.

Trigger Level

Specifies the input level at which sampling will begin when the Trigger Mode is set to "LEVEL." The trigger level is shown by the " ▮- " and " -▮ " in the level meter located at the right of the screen.

Value: -∞–00 dB

NOTE

If Trigger Mode is set to other than "LEVEL," this parameter has no effect.

Pre Trigger

After the selected trigger to start sampling has been received, previously received data for the length of time specified here will be included in the sampled data. When the Trigger Mode is set to "LEVEL" and the early portion of the sample is being lost, you can use this setting to include the early portion.

Value: 0–1000 msec

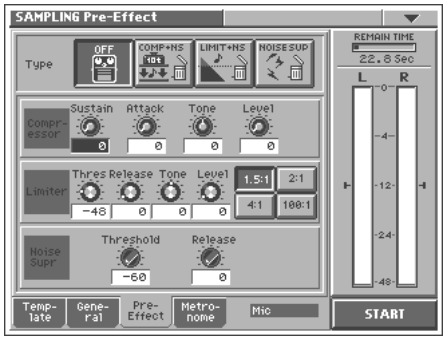
Pre Gain

Adjusts the input gain. This will apply to the sound that is received from all input jacks. It will also be applied to the sound being resampled. With positive (+) values, the gain will be higher than originally, and with negative (-) values the gain will be lower than originally.

Value: -12– +36 dB

Pre-Effect Settings

SAMPLING Pre-Effect



There are three pre-effects: compressor, limiter, and noise suppressor. By using these you can adjust the level of the sound being sampled.

Compressor:

By reducing high levels and raising low levels, this effect smoothes out unevenness in volume.

Limiter:

By compressing sounds that exceed a specified volume level, this effect prevents the sound from distorting.

Noise suppressor:

This effect leaves the original sound untouched, but mutes the noise that is heard during periods of silence.

Type (Pre-Effect Type)

Value

OFF: No pre-effect will be used.

COMP+NS: Compressor and noise suppressor settings can be made.

LMT+NS: Limiter and noise suppressor settings can be made.

NS: Noise suppressor settings can be made.

■ Compressor

Sustain

Specifies the time over which a low-level signal is raised until it reaches a fixed volume.

Value: 0–127

Attack (Attack Time)

Specifies the attack time of the input sound.

Value: 0–127

Tone

Adjusts the tone quality of the compressor.

Value: -50– +50

Level (Output Level)

Adjusts the output volume.

Value: 0– +24 dB

■ Limiter

Thres (Threshold Level)

Specifies the level (threshold level) at which the limiter will begin to function.

Value: -60–0 dB

Release (Release Time)

Specifies the time from when the input level drops below the threshold level until the limiter turns off.

Value: 0–127

Tone

Adjusts the tonal quality of the limiter.

Value: -50– +50

Level (Output Level)

Adjusts the output volume.

Value: 0– +24 dB

Ratio

Specifies the compression ratio.

Value: 1.5:1, 2:1, 4:1, 100:1

■ Noise Suppressor

Threshold (Threshold Level)

Specifies the level at which the noise suppressor will begin to operate. When the signal falls below the specified level, it will be muted.

Value: -60–0 dB

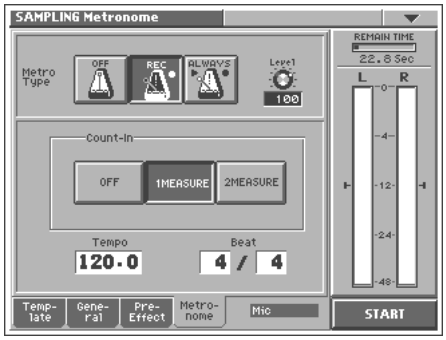
Release (Release Time)

Specifies the time from when the noise suppressor begins to operate until the volume reaches 0.

Value: 0–127

Metronome Settings

Metronome



Metro Type (Metronome Type)

Specifies when you want the metronome to sound.

Value

OFF: The metronome will not sound.

REC: The metronome will sound only during sampling.

ALWAYS: The metronome will sound whenever you sample (including while you are making settings in preparation for sampling).

Level (Metronome Level)

Specifies the volume of the metronome.

Value: 0–127

Count In

Specifies the number of measures for the count-in that will occur before sampling.

Value

OFF: A count will not be sounded.

1MEASURE: A one-measure count will be sounded.

2MEASURE: A two-measure count will be sounded.

NOTE

If Trigger Mode is set to other than “MANUAL,” this parameter has no effect.

Tempo

Specifies the tempo of the metronome.

Value: 20.0–250.0

Beat

Specifies the time signature of the metronome.

Value

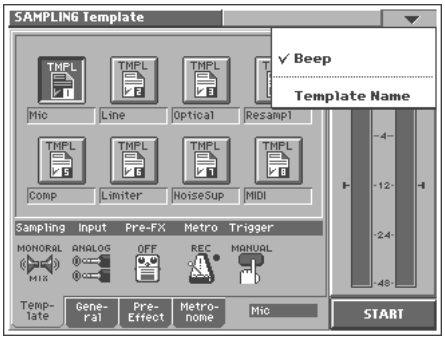
Numerator: 1–31

Denominator: 2, 4, 8, 16, 32

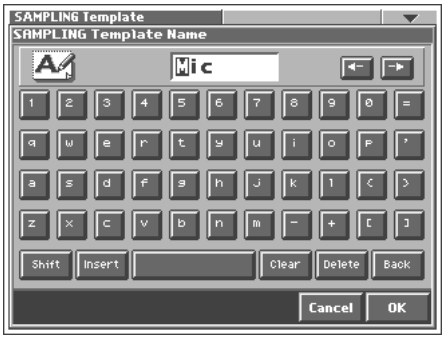
Naming a Template (Template Name)

A template can be given a name of up to eight characters.

1. **Access the SAMPLE Top screen, and select the sample that you want to name (p. 56).**
2. **Touch <▼> in the upper right of the screen.**
   A pulldown menu appears.



3. **In the pulldown menu, touch <Template Name>.**
   The SAMPLING Template Name window appears.



4. **Touch the on-screen alphabetic or numeric keys to enter the new name in the text box.**
   The on-screen keys have the following functions.
   <←><→>: Move the cursor in the text box to the desired input location.
   <SHIFT>: Turn this on when you want to input uppercase letters or symbols.
   <Insert>: Turn this on when you want to insert a character at the cursor location.
   <Clear>: Erases all characters in the text box.
   <Delete>: Deletes the character at the cursor location.
   <Back>: Deletes the character that precedes the cursor location.

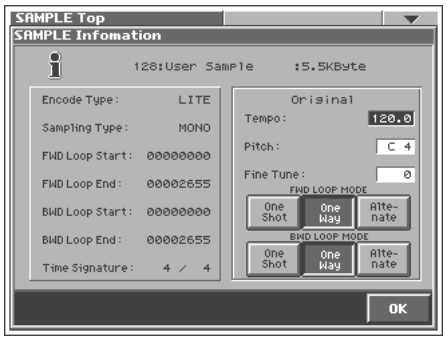
HINT

You can also move the input location cursor by pressing the [◄][►] cursor buttons. Pressing [▲] will change the character at the cursor location to uppercase, and pressing [▼] will change it to lowercase.

5. **When you have finished inputting, touch <OK> to finalize the template name.**

Checking Sample Information

1. **Access the SAMPLE Top screen (p. 56).**
2. **Touch <Info>.**
   The SAMPLE Information screen appears.



In the SAMPLE Information screen you can check the following information for the sample.

- Encode type (p. 70)
- Sampling type (p. 60)
- Loop point location (Loop Start, Loop End) (p. 68)
- Time signature (p. 69)
- Original tempo (p. 69)
- Original pitch
- Original fine tune

MEMO

Original Tempo, Original Pitch, and Original Fine Tune can be modified in this screen.

NOTE

If you want to set an accurate original tempo, make settings in the sample editing screen (p. 69).

Original Pitch

Specifies the key that will play the sample at the pitch at which it was sampled.

Value: C-1 (0)-G9 (127)

Original Fine Tune

Adjusts the current pitch in one-cent steps (1/100 of a semitone) over a range of 1/2 semitone upward or downward.

Value: -50-+50

3. **When you have finished viewing the information, touch <OK> to close the window.**

LOOP MODE

One Shot: The sample will not loop, regardless of the Loop Switch (p. 43) setting of the patch.

One Way: If the Loop Switch (p. 43) of the patch is on, the sample will loop in the forward direction between "LOOP START" and "LOOP END."

Alternate: If the Loop Switch (p. 43) of the patch is on, the sample will loop alternately backward and forward between the "LOOP START" and "LOOP END."

Importing a Sample

To import samples you will use the Disk Save Project screen of Disk mode.

1. **Access the SAMPLE Top screen (p. 56).**
2. **Touch<Import>.**
   Jump to the DISK Import Files screen in the Disk mode.

☞ For details on operations in this screen, refer to **"Importing Individual Patch or Wave Files (Import Files)"** (p. 85).

Editing a Sample

When you have finished sampling, you can edit the sample data. You can also edit samples that you loaded (p. 85).

When editing a sample, touching <PREVIEW> will play the sample so you can check whether it was edited as you expect.

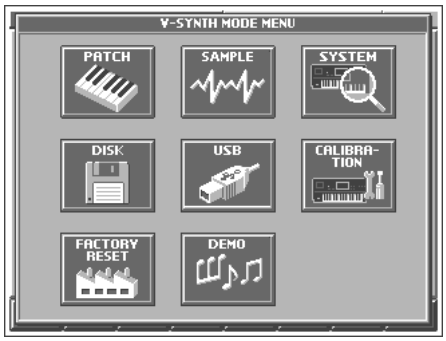
NOTE

- When the editing screens are displayed, playing the keyboard will not produce sound.
- It is not possible to edit two or more samples simultaneously.
- With some exceptions, editing a sample that has been encoded will cause the encoding data to be discarded. In this case, you must encode the data once again (p. 69).
- The factory-set waves (preset waves) cannot be edited.

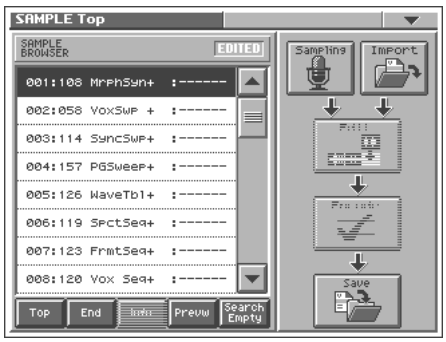
Common Procedure for Editing

Displaying the Sample Edit Screen

1. **Press [MODE].**
   The V-SYNTH MODE MENU window appears.



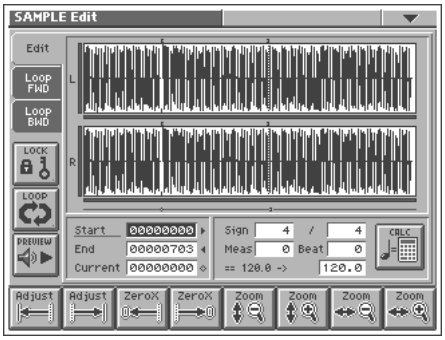
2. **Touch <SAMPLE>.**
   The SAMPLE Top screen appears.



3. **Select the sample that you wish to edit.**
   For details on making this selection, refer to **"Sampling Procedure"** (p. 56).

4. Touch <Edit>.

The SAMPLE Loop FWD screen appears.



5. Touch one of the tabs in the left side of the screen to access the desired editing screen.

<Edit>: Edit the sample of the specified region (p. 66)

<Loop FWD>: Specify the loop region for forward playback (p. 68)

<Loop BWD>: Specify the loop region for backward playback (p. 68)

For details on each editing operation, refer to the corresponding page.

6. When you have finished making settings, press [EXIT] to return to the SAMPLE Top screen.

Functions Common to All Editing Screens

"Start," "End," and "Current" Settings

The V-Synth uses seven terms to indicate locations within a sample.

Sample Start: Beginning of the sample

Sample End: End of the sample

Loop Start, **Loop End:** When the Loop Play is ON, the region between these two points will be played repeatedly.

Edit Start, **Edit End:** Editing will affect the region between these two points.

Current: This is the currently selected location of the sample.

Move the cursor to "Start," "End," or "Current" to select the point that you want to specify. Then specify the location by turning the VALUE dial, by using [INC/+][DEC/-], or by dragging your finger over the sample in the screen.

MEMO

- The region of the sample between Edit Start and Edit End is displayed with the color inverted.
- When Current = Loop/Edit Start, moving Loop/Edit Start will cause Current to change as well.

NOTE

It is not possible to move Loop/Edit Start to the right of Loop/Edit End.

(LENGTH LOCK)

This locks the length of the region between the start point (Start) and end point (End) of the sample. It is convenient to use this when you already know the length of the sample that you need, and want to find the right region to use.

After the length has been locked, you can turn the VALUE dial, use [INC/+] [DEC/-], or drag your finger over the sample in the screen to adjust the Start and End locations while maintaining the distance between these two points.

HINT

You can also use Adjust (p. 65) or Zero Cross Search (p. 66) while the length of the sample is locked.

(LOOP)

This switches loop playback on/off. Turn this on if you want the loop region specified in the Loop FWD/BWD screen to play repeatedly.

(PREVIEW)

This plays the sample. During playback, you can touch this once again to stop playback.

(Adjust)

In the Loop FWD/BWD screen, the Adjust function moves the Loop Start, Loop End, or Current locations to the nearest of the following locations 1–5.

In edit screens, the Adjust function moves the Edit Start, Edit End, or Current locations to the nearest of the following locations 1–7.

1 Sample Start location
2 Sample End location
3 Loop Start location
4 Loop End location
5 Current location
6 Edit Start location
7 Edit End location

Move the cursor to the point that you want to adjust ("Start," "End," or "Current"), and touch Adjust or Adjust.

Touching Adjust will move the point toward the left, and touching Adjust will move it toward the right.

MEMO

In the SAMPLE Encode screen (p. 69), this will move the Current location to the closest event.

HINT

For example, if you wish to touch <PREVIEW> to check whether the results of your editing were satisfactory, you can jump the current location.

NOTE

In some cases nothing may happen, due to the relation between points or the Length Lock setting.

(Zero Cross Search)

This function searches for locations where the sample has a value of zero. When setting loop points or when cutting the sample, you should search for locations where the sample value is zero so that noise is not heard when you play the sample.

Move the cursor to the point (“Start,” “End,” or “Current”) for which you want to find a zero-cross point, and then touch or . Touching will search toward the left, and touching will search toward the right.

(Zoom)

This expands or shrinks the displayed sample.

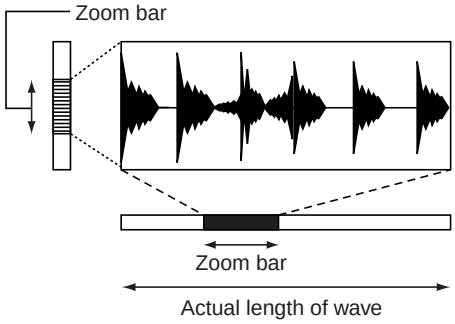
In any screen that displays the sample, you can touch the following buttons to expand or shrink the displayed sample.

: Shrink vertically

: Expand vertically

: Shrink horizontally

: Expand horizontally



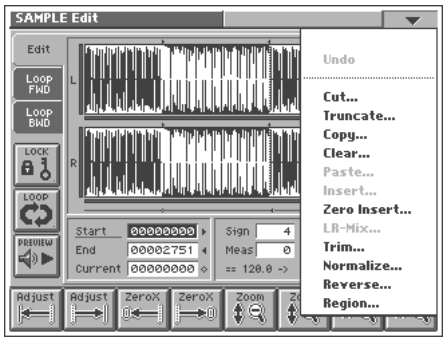
The vertical zoom bar indicates the magnification of the sample in the vertical direction. The horizontal zoom bar indicates the magnification of the sample in the horizontal direction, and shows the current location. As the display is magnified, the zoom bar will become narrower.

Editing the Specified Region of the Sample

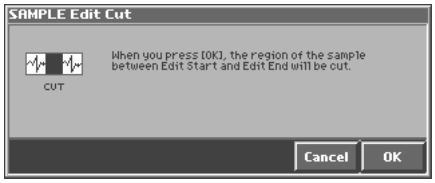
You can specify a region of the sample, and edit the region by cutting or copying.

Basic Operation

1. **Access the SAMPLE Edit screen (p. 64).**
2. **Specify the region that you want to edit (Edit Start–Edit End), or the Current location (p. 65).**
3. **Touch <▼> in the upper right of the screen.**
   A pulldown menu appears.



4. **In the pulldown menu, touch the editing function that you want to execute.**
   A window appears, asking you to confirm the operation.



MEMO

Some editing functions require you to input a numerical value. For details, refer to the following explanations of each editing function.

5. **Touch <OK> to execute the editing function.**

HINT

- If you want to cancel without executing, touch <Cancel>.
- By touching “Undo” in the pulldown menu, you can return to the state prior to executing the operation (Undo). Depending on the type of edit function you execute, or on the state of the work area, there may be cases in which the Undo function cannot be executed. In such cases, you will not be able to select <Undo>.

6. **If you want to save the edited result, perform the Save operation (p. 72).**

Sample Editing Functions

Cut

The region of the sample between Edit Start and Edit End will be cut.

Truncate

The region of the sample between Edit Start and Edit End will be kept, and the remainder of the sample will be deleted.

Copy

The sample between Edit Start and Edit End will be copied.

Clear

The sample between Edit Start and Edit End will be set to values of zero.

Paste

The copied data will be overwritten, beginning at the current location.

NOTE

If there is any sample data following the current location, it will be lost as far as the pasted portion extends.

Insert

The copied data will be inserted at the current location.

HINT

You can cut, paste, and insert between different samples. After copying, press [EXIT] to return to the SAMPLE Top screen. Select a different sample, access the SAMPLE Edit screen, and then paste or insert.

Zero Insert

This operation inserts silent space at the current location. It can also be used to lengthen a sample to a precise number of measures and beats.

In the SAMPLE Edit Zero Insert window, specify the length of the silent region that you want to insert. This setting is made in terms of a number of samples. Data in the V-Synth is handled as 44.1 kHz data, meaning that one second contains 44,100 data samples.

HINT

For example, if you wish to insert one second of silence, you would specify “44100” and execute Zero Insert.

NOTE

If the amount of remaining memory is small, it may not be possible to execute Copy, Paste, Insert, or Zero Insert. In such cases, delete unneeded samples from memory (p. 60).

LR-Mix

The stereo sample will be mixed to L, converting it into a monaural sample. If this is set to monaural, less wave memory will be used. This will also decrease the number of voices.

Trim (Trimming)

If the beginning and end of the sample are values other than zero, noise will be heard when you play the sample. Trim sets the values at the beginning and end of the sample to zero.

In the SAMPLE Edit Trim window, specify the length that you want to trim. This setting is made in terms of a number of samples. Data in the V-Synth is handled as 44.1 kHz data, meaning that one second contains 44,100 data samples.

HINT

For example, trimming at 100 samples. This will connect the first data sample and the one hundredth data sample by a smooth line of one hundred points. Similarly, the last data sample and the data sample one hundred samples before it will be connected by a smooth line of one hundred points.

Normalize

The Normalize operation is used to uniformly increase or decrease the level of the entire sample without allowing it to distort. This is used when you wish to make the volume consistent with other samples.

In the SAMPLE Edit Normalize window, specify the degree of normalization that you want to use. The value is specified in terms of a percentage.

HINT

For example, let’s suppose that 100 is the maximum volume at which the volume does not distort. Executing the Normal operation at a setting of 90% will make the maximum value of the sample be 90.

NOTE

If you normalize at a low setting and then normalize at a high setting, the audio quality will deteriorate. This means that if you intend to normalize several times, you should start from the higher value and work downward.

Reverse

The sample will be reversed between Edit Start and Edit End. If you want the sample to play backwards, execute Reverse to reverse the sample from the beginning.

Region

The region of the sample between Edit Start and Edit End can be stored in internal memory as a separate sample. The original sample will remain unchanged.

Perform the following procedure.

1. **Select the region that you want to extract as a separate sample, and execute Region.**
2. **In the SAMPLE Edit Region window, select the sample number to which you want to paste the extracted region of the sample, and touch <OK>.**
3. **Assign a name to the new sample, and touch <OK>.**

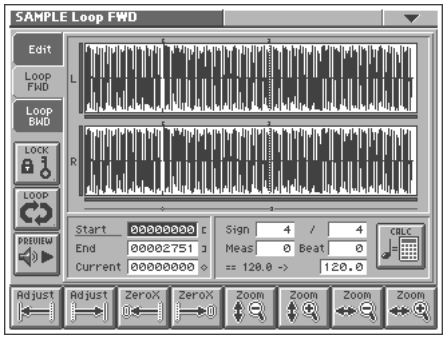
MEMO

If in step 2 you select a sample number that already has a sample, the sample data between Edit Start and Edit End will be added to the end of the selected sample.

Loop Region Settings

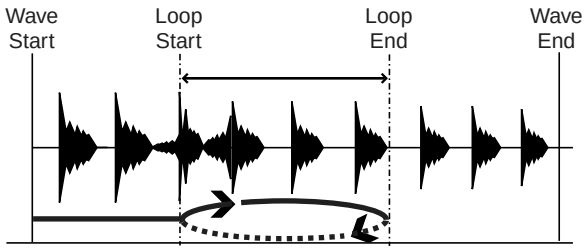
When the loop switch (p. 65) is ON, you can specify the region that will be played back as a loop. The region of the sample between Loop Start and Loop End will be played back repeatedly.

In the SAMPLE Loop FWD screen that appears when you touch <Loop FWD>, specify the loop region for forward playback. In the SAMPLE Loop BWD screen that appears when you touch <Loop BWD>, specify the loop region for backward playback.



Immediately after sampling or loading a sample, Loop Start will be set to the beginning of the sample and Loop End to the end of the sample.

If you set Loop Start and Loop End to locations within the sample, the sample will play back from the beginning, and then the region between Loop Start and Loop End will play back repeatedly.



MEMO

The data in the V-Synth is handled as 44.1 kHz data, which means there are 44,100 data samples per second. The shortest possible loop that can be set is 16 data samples.

NOTE

Loop range settings are ignored when the Playback Mode (p. 43) is set to “STEP” or “EVENT.”

Original Tempo Setting

The Original Tempo is the reference tempo of the sample used when synchronizing it to the master tempo.

Example: A sample whose original tempo is 100

If the master tempo is set to 200 and the sample is synchronized, the sample will play back at double the speed at which it was recorded. If you set the master tempo to 50 and synchronize the sample, it will play back at half the speed at which it was

The exact original tempo can be calculated from the time signature, number of measures, and number of beats for the sample length between Loop Start and Loop End. This means that you must first specify the loop region, and then set the original tempo.

NOTE

If you wish to play back a loop while simultaneously synchronizing another sample, you must specify the correct original tempo. If you fail to do this, the sounds will drift out of synchronization.

1. **Move the cursor to the item that you wish to set.**
2. **Either turn the VALUE dial or press [INC/+][DEC/-] to set the "Sign" (time signature), "Meas" (measure), and Beat values.**
3. **Touch** **.**

The precise tempo will be displayed at the right of the "->." The tempo displayed here is the original tempo.

HINT

You can also move the cursor to the original tempo, and set it by rotating the VALUE dial or by using [INC/+][DEC/-].

Converting the Sample to V-Synth Data (Encode)

After you have finished editing the sample, you should encode it. By using the encoding that is appropriate for the sample, you'll be able to maintain a higher quality of audio while controlling the pitch, time, and formant.

NOTE

The factory-set waves (preset waves) cannot be encoded.

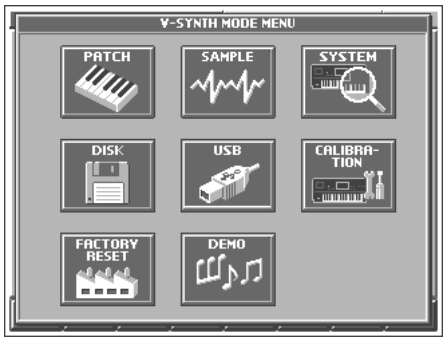
Displaying the Encode Screen

NOTE

Samples whose wave is too short (0.1 sec or less) cannot be encoded, and the SAMPLE Encode screen cannot be accessed for such samples.

1. **Press [MODE].**

   The V-SYNTH MODE MENU window appears.



2. **Touch <SAMPLE>.**

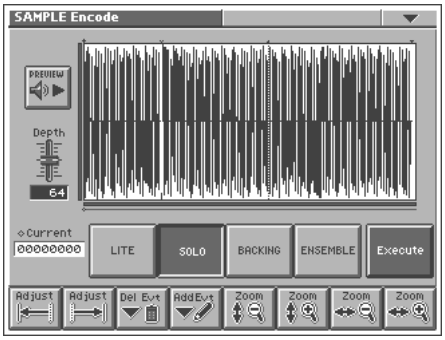
   The SAMPLE Top screen appears.

3. **Select the sample number that you wish to encode.**

   For details on how to select a sample, refer to **"Sampling Procedure"** (p. 56).

4. Touch <Encode>.

The SAMPLE Encode screen appears.



To Execute the Encode Operation

In the SAMPLE Encode screen, select the encode type, set the encode depth, and delete or add events. Then touch <Execute>.

If you wish to stop the encode during the operation, touch <Abort>.

When encoding is completed, you will return to the SAMPLE Top screen.

For details on these settings, refer to the following sections.

MEMO

The amount of time required by the encoding process will depend on the sample. You may need to wait a certain amount of time for encoding to be completed.

Selecting the Encoding Type

You can choose from the following four types of encoding. Touch the appropriate button to select a type.

LITE

This is the simplest encoding type. When you sample on the V-Synth, this type is selected by default. This type can be used with a variety of sounds, but to obtain the highest quality we recommend that you encode using one of the other types.

SOLO

This is suitable for monophonic vocals or monophonic wind instruments (such as sax, trumpet, or flute). If you encode the sample using this type, you will be able to control the formant (p. 45) and use the robot voice function (p. 43). Even if you encode using SOLO, you can still play the sample polyphonically.

BACKING

This is suitable for decay-type instruments. It is particularly suitable for phrases that include instruments with a clear attack (such as drums, percussion, and guitar chords).

ENSEMBLE

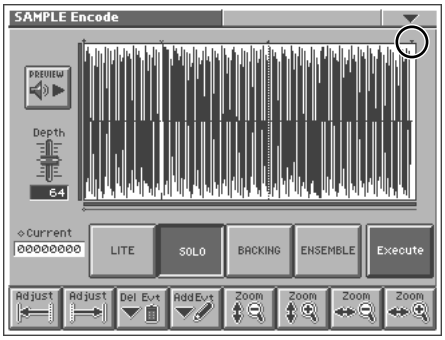
This is suitable for sustain-type instruments. It is particularly suitable when there are smooth changes in tone (such as choir or strings).

NOTE

- If the data is encoded using “BACKING” or “ENSEMBLE,” it will not be possible to use the formant control or robot voice functions.
- Once a sample has been encoded, editing that sample (except for some operations) will cause the encoded data to be discarded. If you then access the SAMPLE Encode screen in this state, “LITE” will always be selected as the encoding type. Select the appropriate encoding type, and then re-encode the sample.
- Depending on the sample, encoding with “SOLO” may cause the sound to be different than you expect, such as changes in pitch being incorrect by one octave. If this occurs, re-encode the sample using “BACKING” or “ENSEMBLE.”
- If a sample that contains large amounts of reverb or delay is encoded using “SOLO,” it may not sound as you expect. If this occurs, re-encode the sample using “BACKING” or “ENSEMBLE.”

Automatically Detecting Events

By specifying the Depth, you can automatically detect and "▼"mark locations where there is a strong attack (i.e., locations where the volume changes abruptly). Such marked locations are called **events**.



Depth (Encode Depth)

In the SAMPLE Encode screen, move the cursor to "Depth" and set the value. The higher the value you set, the more events will be assigned.

Value: 0–127

MEMO

If the Playback Mode (p. 43) is "STEP," the sample will play to the next event, and then stop each time you play the key. When the Playback Mode is set to "EVENT," the sample will be divided at event locations, and assigned to each key.

NOTE

- If you set Depth to a high value, a large number of events may be detected. If you encode in such a state, the interval between events will be too short, and the expected result will not be obtained when you play back in event units.
- If you change the location of an event after encoding, you must re-encode the sample. When you encode, the newly detected event locations will take effect.

Deleting and Adding Events

Setting the Encode Depth and automatically detecting events does not guarantee that the events will be added at the locations that you expect. If necessary, you can delete or add events as you like.
In the SAMPLE Encode screen, you can touch <PREVIEW> to play the sample from the current location until the next event. By touching <PREVIEW>, you can play the sample to see whether events have been assigned to the locations that you expect.

NOTE

- Be aware that if you change the encode depth after deleting or adding events, the events that were modified manually will be discarded, and the events that were detected by depth will be displayed.
- If you modify the location of events after encoding, you must re-encode. The modified location of the events will take effect when you encode.

Deleting an Event

1. **Move the cursor to "Current."**
2. **By turning the VALUE dial, pressing [INC/+][DEC/-], or dragging your finger over the sample in the screen, set Current to the location of the event that you want to delete.**
3. **Touch either or .**
   The Current location will move to the location of the next event toward the left or right.
4. **Repeat step 3 to move Current to the location of the event that you wish to delete.**
5. **Touch to delete the event.**

NOTE

The events at the beginning and end of a sample cannot be deleted.

Adding an Event

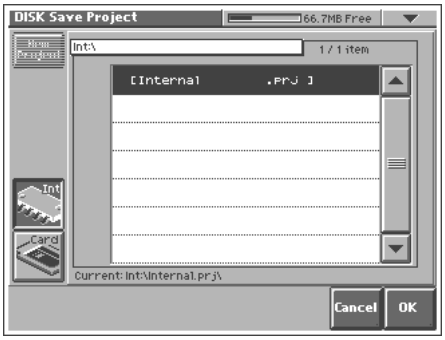
1. **Move the cursor to "Current."**
2. **By turning the VALUE dial, pressing [INC/+][DEC/-], or dragging your finger over the sample in the screen, move Current to the location at which you want to add the event.**
3. **Touch to add the event.**

Saving a Sample

Samples that you sample or encode will be lost when you turn off the power. If you want to keep these samples, use the Disk Save Project screen in the Disk mode.

1. **Access the SAMPLE Top screen (p. 56).**
2. **Touch <Save>.**

   Jump to the DISK Save Project screen in the Disk mode.



☞ For details on operations in this screen, refer to **"Saving Project on Disk (Save Project)"** (p. 85).

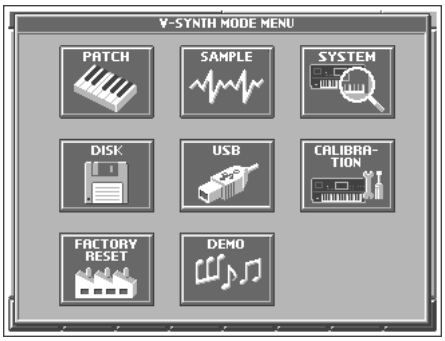
Settings Common to All Modes (System Mode)

Settings that affect the entire operating environment of the V-Synth, such as tuning and MIDI message reception, are referred to as **system functions**. This section explains how to make settings for the System functions and describes the functions of the different System parameters.

How to Make the System Function Settings

1. **Press [MODE].**

   The V-SYNTH MODE MENU window appears.



2. **Touch <SYSTEM>.**

   The SYSTEM Com Master screen appears.

3. **The parameters are organized into several editing groups. Touch one of the buttons at the bottom of the screen to select the edit group containing the parameters you want to set.**

4. **Touch one of the tabs in the left of the screen to select the desired editing screen.**

☞ For details on how the parameters are grouped, refer to **"System Parameters"** (p. 108).

5. **In each editing screen, touch the touch screen to set the parameters.**

☞ For details on how to use the touch screen, refer to **"Basic Touch Screen Operation"** (p. 19).

6. **When editing a parameter that requires you to specify a value, move the cursor to the value box of that parameter. Then modify the value by either turning the VALUE dial or pressing [INC/+] or [DEC/-]. You can also modify a value by dragging over the touch screen.**

7. **Repeat steps 3–6 to make the settings for the System function.**

Saving the System Settings (Write)

Changes you make to the System function settings are only temporary—they will be discarded as soon as the power is turned off. If you want to keep any changes you've made in the system settings, you must save them in internal memory.

NOTE

When you perform the save procedure, the data that previously occupied the save destination will be lost. However, the factory setting data can be recovered by performing the Initialization procedure.

1. **After you have edited the settings of the System function, touch <Write>, located in the lower right of the screen.**

Initializing the System Settings (Init)

The current settings of the system functions can be restored to a set of standard settings, or to the factory settings.

1. **Access the System Edit screen (p. 73).**

2. **Touch <Init>, located in the lower right of the screen.**

HINT

If you want the factory settings to be in effect the next time the V-Synth is powered up, touch <Write> to save the settings.

Functions of System Parameters

This section explains what the different System parameters do, and also how these parameters are organized.

Settings Common to the Entire System (Common)

Master

Master Tune

Adjusts the overall tuning of the V-Synth. The display shows the frequency of the A4 note (center A).

Value: 415.3–466.2 Hz

Master Key Shift

Shifts the overall pitch of the V-Synth in semitone steps.

Value: -24– +24

Master Level

Adjusts the volume of the entire V-Synth.

Value: 0–127

Patch Remain (Patch Remain Switch)

Specifies whether currently sounding notes will continue sounding when another patch is selected (ON), or not (OFF).

Also, when this is "ON," changes produced by incoming MIDI messages such as Volume (CC 7) or Pan (CC 10), as well as tonal quality and volume changes produced by the various controllers will be inherited.

Value: OFF, ON

NOTE

Effects settings change as soon as you switch to a new patch, without being influenced by the Patch Remain setting. Because of this, certain effects settings can cause notes that were until then sounding to no longer be heard, even though Patch Remain has been set to on.

Powerup Mode

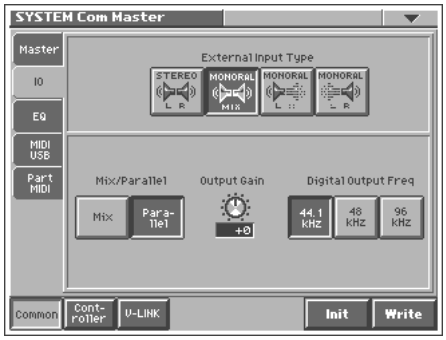
Specifies the condition that the V-Synth will be in when the power is turned on.

Value

LAST SET: Reinstates the patch selected at the time the V-Synth was last turned off.

DEFAULT: The V-Synth will be ready to play Patch "001."

IO



External Input Type

Selects the type of external input used when Oscillator Type (p. 42) is set to "EXT IN."

Value

STEREO L R: Input in stereo.

MONORAL MIX: Mix the L and R input signals and input in monaural.

MONORAL L: Input the L signal in monaural.

MONORAL R: Input the R signal in monaural.

Mix/Parallel

Specifies how the sound of the entire V-Synth will be output.

Value

MIX: Set this to have the collective output of all sounds output from the OUTPUT A (MIX) jacks. When you want to check the final overall sound being output, set to MIX.

HINT

Sounds output from the PHONES jack are the same as those output from the MIX OUT jacks. Therefore, any sounds set with Output Assign to be output from the DIRECT OUT jacks is not output from the PHONES jack. Be sure to have any sound you want to hear through the headphones set to "MIX."

PARALLEL: Output according to each Output Assign settings.

Output Gain

This adjusts the output gain from the V-Synth's Analog Out and Digital Out. When, for example, there are relatively few voices being sounded, boosting the output gain can let you attain the most suitable output level for recording and other purposes.

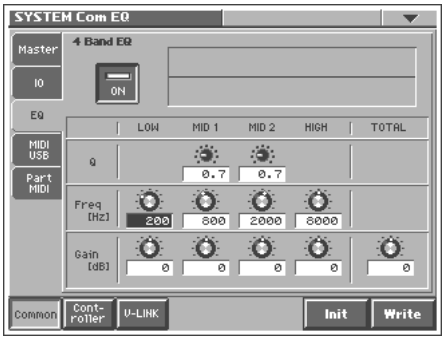
Value: -12–+12 dB

Digital Output Freq (Digital Output Frequency)

Sets the sampling frequency of the digital output.

Value: 44.1, 48, 96 KHz

EQ



4 Band EQ (4-Band Equalizer Switch)

Switch the 4-Band equalizer on / off.

Value: OFF, ON

LOW Freq (Low Frequency)

Selects the frequency of the low range.

Value: 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000 Hz

LOW Gain

Adjusts the gain of the low frequency. Positive (+) settings will emphasize the low-frequency range.

Value: -15– +15 dB

MID 1 Q

Adjusts the width of the middle range 1. Set a higher value for Q to narrow the range to be affected.

Value: 0.5, 0.7, 1.0, 2.0, 4.0, 8.0

MID 1 Freq (Mid 1 Frequency)

Selects the frequency of the middle range 1.

Value: 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000, 10000, 12500, 16000, 20000 Hz

MID 1 Gain

Adjusts the gain of the middle range 1. Positive (+) settings will emphasize the middle range 1.

Value: -15–+15 dB

MID 2 Q

Adjusts the width of the middle range 2. Set a higher value for Q to narrow the range to be affected.

Value: 0.5, 0.7, 1.0, 2.0, 4.0, 8.0

MID 2 Freq (Mid 2 Frequency)

Selects the frequency of the middle range 2.

Value: 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000, 10000, 12500, 16000, 20000 Hz

MID 2 Gain

Adjusts the gain of the middle range 1. Positive (+) settings will emphasize the middle range 2.

Value: -15–+15 dB

High Freq (High Frequency)

Selects the frequency of the high range.

Value: 2000, 4000, 5000, 6300, 8000, 10000, 12500, 16000, 20000 Hz

HIGH Gain

Adjusts the gain of the high frequency. Positive (+) settings will emphasize the high-frequency range.

Value: -15– +15 dB

TOTAL Gain

Adjusts the total gain.

Value: -15– +15 dB

MIDI / USB

Device ID (Device ID Number)

When you want to transmit or receive System Exclusive messages, set this parameter to match the Device ID number of the other MIDI device.

Value: 17–32

Clock Source

The LFO cycle or multi-effects changes can be synchronized to a clock (tempo). When this is used by the patch, this Clock Source setting determines the clock which will be used.

Value

INTERNAL: The Patch Tempo will be used.

EXTERNAL: Synchronize to the clock of an external sequencer.

Rx PC (Receive Program Change Switch)

Specifies whether Program Change messages will be received (ON) or not (OFF).

Value: OFF, ON

Rx Bank (Receive Bank Select Switch)

Specifies whether Bank Select messages will be received (ON) or not (OFF).

Value: OFF, ON

Rx Sys-Ex (Receive System Exclusive Switch)

Specifies whether System Exclusive messages will be received (ON) or not (OFF).

Value: OFF, ON

Tx Edit (Transmit Edit Data Switch)

Specify whether changes you make in the settings of a patch will be transmitted as system exclusive messages (ON), or will not be transmitted (OFF).

Value: OFF, ON

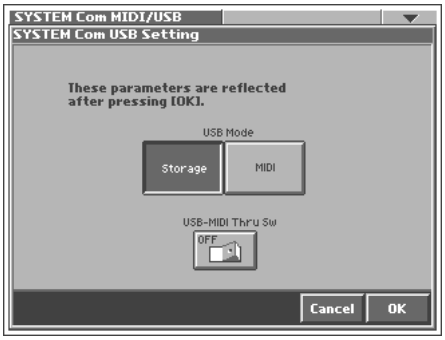
Clock Out

Specifies whether MIDI clock will be transmitted (ON) or not (OFF).

Value: OFF, ON

USB Setup

Touch <USB Setup>, and a window like the following will appear.



Touch <OK> to apply the settings of this window, or touch <Cancel> to cancel and close the window.

USB Mode

Selects the mode in which the USB connector will be used.

Available Settings

Storage: Storage mode. Select this if you want to transfer files.

MIDI: MIDI mode. Select this if you want to exchange MIDI messages with a sequencer or other program.

NOTE

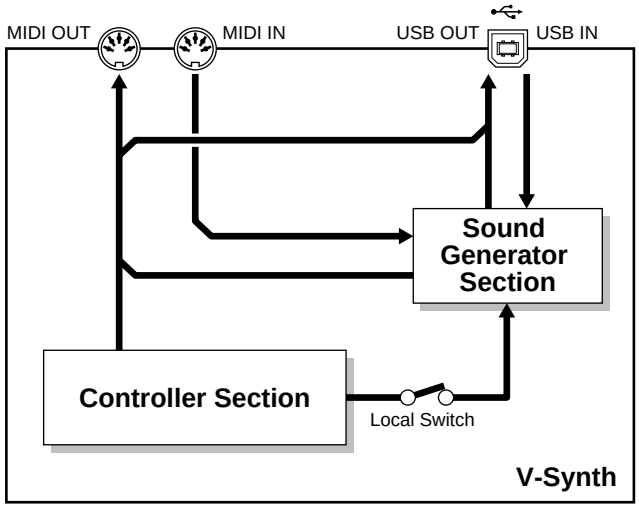
You must switch the USB Mode before you connect the V-Synth to your computer via the USB cable. If you change this setting while the V-Synth is connected, the computer may fail to recognize it correctly.

☞ For details on connections to your computer in each USB Mode, refer to “Connecting Your Computer Via USB (USB Mode).”

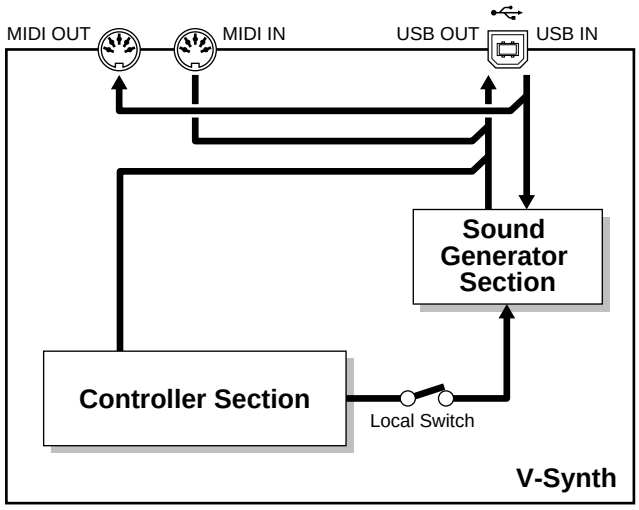
USB-MIDI Thru Sw (USB-MIDI Thru Switch)

When USB Mode is set to “MIDI,” this switch specifies whether MIDI messages received at the MIDI connector will be re-transmitted from the MIDI OUT connector (ON) or not (OFF).

Value: OFF, ON

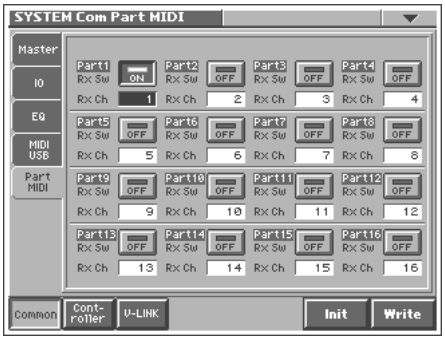


USB-MIDI Thru Sw=OFF



USB-MIDI Thru Sw=ON

Part MIDI



Part1–16 Rx Sw (Part 1–16 Receive Switch)

For each part, specify whether MIDI messages will be received (ON), or not (OFF).

If this is “ON,” you can play that part from an external MIDI device. Normally, you will select “ON” only for part 1 which you play from the keyboard.

Value: OFF, ON

Part 1–16 Rx Ch (Part 1–16 Receive Channel)

Specifies the MIDI receive channel for each part.

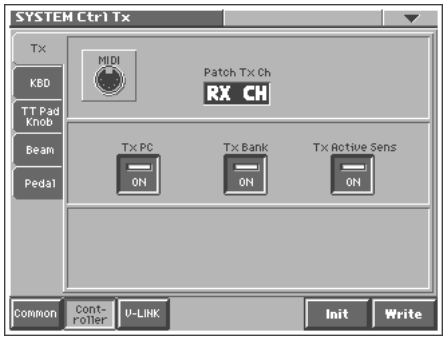
Value: 1–16

NOTE

Performance data directed to the V-Synth itself will be transmitted on the channel you specified for part 1.

Controller Settings (Controller)

Tx



Patch Tx Ch (Patch Transmit Channel)

Specifies the transmit channel of MIDI messages in Patch mode. If you do not want to transmit MIDI messages to external MIDI devices, turn this parameter “OFF.” If you want the transmit channel to always match the Patch Receive Channel, set this parameter to “RX CH.”

Value: 1–16, RX CH, OFF

Tx PC (Transmit Program Change Switch)

Specifies whether Program Change messages will be transmitted (ON) or not (OFF).

Value: OFF, ON

Tx Bank (Transmit Bank Select Switch)

Specifies whether Bank Select messages will be transmitted (ON) or not (OFF).

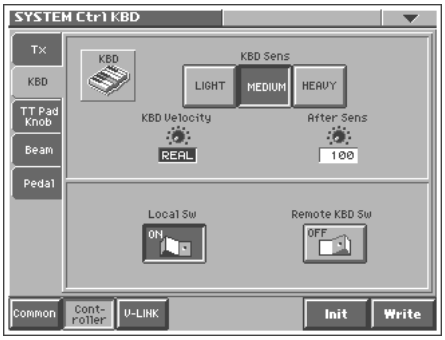
Value: OFF, ON

Tx Active Sens (Transmit Active Sensing Switch)

Specifies whether Active Sensing messages will be transmitted (ON) or not (OFF).

Value: OFF, ON

KBD



KBD Sens (Keyboard Sensitivity)

Adjusts the keyboard's touch.

Value

LIGHT: Light weight synthesizer keyboard like

MEDIUM: Standard

HEAVY: Acoustic piano simulation

KBD Velocity (Keyboard Velocity)

Specifies the velocity value that will be transmitted when you play the keyboard. If you want actual keyboard velocity to be transmitted, set this to "REAL." If you want a fixed velocity value to be transmitted regardless of how you play, specify the desired value (1–127).

Value: REAL, 1–127

After Sens (Aftertouch Sensitivity)

Specifies the Aftertouch sensitivity. Higher values will allow Aftertouch to be applied more easily. Normally you will leave this at "100."

Value: 0–200

Local Sw (Local Switch)

The Local Switch determines whether the internal sound generator is disconnected (OFF) from the controller section (keyboard, pitch bend / modulation lever, knobs, buttons, Time Trip Pad, D Beam controller, pedal, and so on); or not disconnected (ON). Normally this is left "ON," but if you wish to use the V-Synth's keyboard and controllers to control only external sound modules, set it to "OFF."

Value: OFF, ON

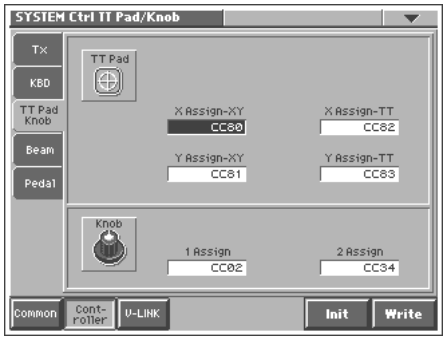
Remote KBD Sw (Remote Keyboard Switch)

Set this parameter "ON" when you want to use an external MIDI keyboard instead of the V-Synth's keyboard. In this case, the MIDI transmit channel of the external MIDI keyboard can be set to any channel. Normally you will leave this parameter "OFF."

HINT

Turn this "ON" when you want to control the V-Synth from an external MIDI device when performing with the Arpeggiator (p. 24).

TT Pad/Knob



X Assign-XY

Specifies the MIDI controller number that will be transmitted by movements in the 'X' (horizontal) direction when the Time Trip pad is in XY mode.

Value

OFF: No message will be transmitted.

CC01–31, 33–95: Controller numbers 1–31, 33–95

Y Assign-XY

Specifies the MIDI controller number that will be transmitted by movements in the 'Y' (vertical) direction when the Time Trip pad is in XY mode.

Value

OFF: No message will be transmitted.

CC01–31, 33–95: Controller numbers 1–31, 33–95

X Assign-TT (X Assign-Time Trip)

Specifies the MIDI controller number that will be transmitted by movements in the 'X' (horizontal) direction when the Time Trip pad is in Time Trip mode.

Value

OFF: No message will be transmitted.

CC01–31, 33–95: Controller numbers 1–31, 33–95

Y Assign-TT (Y Assign-Time Trip)

Specifies the MIDI controller number that will be transmitted by movements in the 'Y' (vertical) direction when the Time Trip pad is in Time Trip mode.

Value

OFF: No message will be transmitted.

CC01–31, 33–95: Controller numbers 1–31, 33–95

☞ For details on control change messages, refer to **"MIDI Implementation"** (p. 153).

Knob 1, 2 Assign

Specifies the MIDI controller number that will be transmitted by movements in the ASSIGNABLE CONTROL knob.

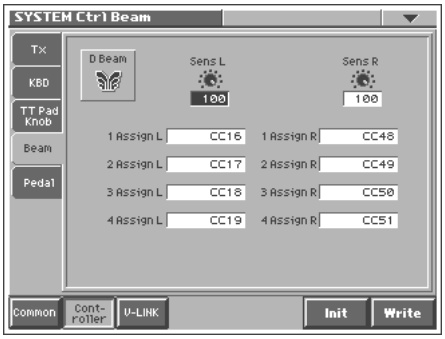
Value

OFF: No message will be transmitted.

CC01–31, 33–95: Controller numbers 1–31, 33–95

For more information about Control Change messages, please refer to **"MIDI Implementation"** (p. 153).

Beam



D Beam Sens L, R (D Beam Sensitivity L, R)

This sets the D Beam Controller's sensitivity. Sens L is the left side. The higher the value set, the more readily the D Beam Controller goes into effect. Normally you will leave this at "100."

Value: 0–200

D Beam 1–4 Assign L, R

Specifies the MIDI controller number that will be transmitted by movements in the D Beam Controller. Assign L is the left side, and Assign R is the right side.

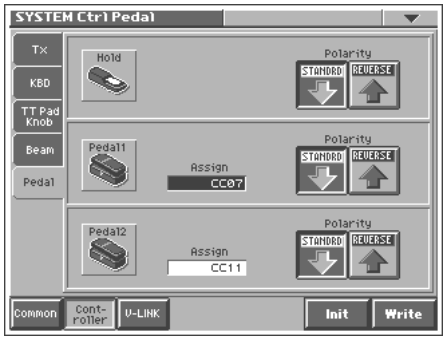
Value

OFF: No message will be transmitted.

CC01–31, 33–95: Controller numbers 1–31, 33–95

For more information about Control Change messages, please refer to **"MIDI Implementation"** (p. 153).

Pedal



Hold Polarity (Hold Pedal Polarity)

Select the polarity of the Hold pedal. On some pedals, the electrical signal output by the pedal when it is pressed or released is the opposite of other pedals. If your pedal has an effect opposite of what you expect, set this parameter to "REVERSE." If you are using a Roland pedal (that has no polarity switch), set this parameter to "STANDARD."

Value: STANDARD, REVERSE

Pedal 1, 2 Assign

This specifies the function of each pedal connected to the CTRL 1, CTLR 2 PEDAL jacks.

Value

OFF: The control pedal will not be used.

CC01–31, 33–95: Controller numbers 1–31, 33–95

For more information about Control Change messages, please refer to **"MIDI Implementation"** (p. 153).

BEND UP: Pitch bend (positive direction)

BEND DOWN: Pitch bend (negative direction)

AFT: Aftertouch

Pedal 1, 2 Polarity

Selects the polarity of the pedal. On some pedals, the electrical signal output by the pedal when it is pressed or released is the opposite of other pedals. If your pedal has an effect opposite of what you expect, set this parameter to "REVERSE." If you are using a Roland pedal (that has no polarity switch), set this parameter to "STANDARD."

Value: STANDARD, REVERSE

V-LINK Settings (V-LINK)

Tx

MIDI Channel (V-LINK MIDI Channel)

Specifies the channel used to transmit MIDI messages for V-LINK control.

Value: 1–16

Audio (V-LINK Audio Switch)

Specifies whether sound from the externally connected video device will be played (ON) or not played (OFF).

Value: OFF, ON

KBD Output (V-LINK Keyboard Output Fade Switch)

Specifies whether the video output from the video device will be stopped (ON) or will not be stopped (OFF) when you are not holding down a key.

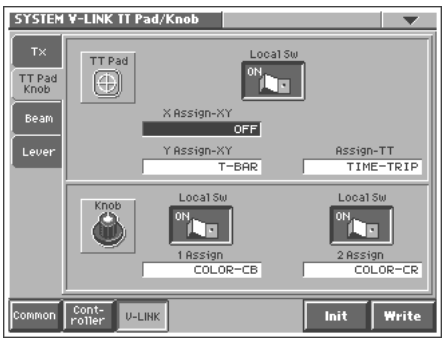
Value: OFF, ON

Palette Local Sw (V-LINK Patch Palette Local Switch)

Specify whether you will press PATCH PALETTE NUMBER [1]–[8] in V-Link mode to switch patches (ON) or not (OFF)

Value: OFF, ON

TT Pad/Knob



TT Pad Local Sw (V-LINK Time Trip Pad Local Switch)

Specify whether the Time Trip pad and the internal sound generator will be disconnected in V-Link mode (OFF) or not disconnected (ON).

Value: OFF, ON

X Assign-XY (V-LINK X Assign-XY)

Specify the V-Link function that will be controlled when you operate the Time Trip pad in the X (horizontal) direction in XY mode.

Value

OFF: The time trip pad will not be used.

PLAYBACK-SPEED: Playback speed

DISSOLVE-TIME: Dissolve time (time over which the image switches)

AUDIO LEVEL: Volume during audio playback

COLOR-CB: Color Cb (color-difference signal)

COLOR-CR: Color Cr (color-difference signal)

BRIGHTNESS: Brightness

VFX1: Visual effects 1

VFX2: Visual effects 2

VFX3: Visual effects 3

VFX4: Visual effects 4

OUTPUT-FADE: Output fade

T-BAR: T bar

Y Assign-XY (Link Y Assign-XY)

Specify the V-Link function that will be controlled when you operate the Time Trip pad in the Y (vertical) direction in XY mode.

Value

OFF: The time trip pad will not be used.

PLAYBACK-SPEED: Playback speed

DISSOLVE-TIME: Dissolve time (time over which the image switches)

AUDIO LEVEL: Volume during audio playback

COLOR-CB: Color Cb (color-difference signal)

COLOR-CR: Color Cr (color-difference signal)

BRIGHTNESS: Brightness

VFX1: Visual effects 1

VFX2: Visual effects 2

VFX3: Visual effects 3

VFX4: Visual effects 4

OUTPUT-FADE: Output fade

T-BAR: T bar

Assign-TT (V-LINK Assign-Time Trip)

Specify the V-Link function that will be controlled when you operate the Time Trip pad in Time Trip mode.

Value

OFF: The time trip pad will not be used.

TIME-TRIP: Time trip

Knob 1, 2 Local Sw (V-LINK Knob1, 2 Local Switch)

Specify whether the assignable controller knobs 1 or 2 will be disconnected from the internal sound generator in V-Link mode (OFF) or not disconnected (ON).

Value: OFF, ON

Knob 1, 2 Assign (V-LINK Knob1, 2 Assign)

Specify the V-Link function that will be controlled when you turn the ASSIGNABLE CONTROL knob.

Value

OFF: The assignable controller will not be used.

PLAYBACK-SPEED: Playback speed

DISSOLVE-TIME: Dissolve time (time over which the image switches)

AUDIO LEVEL: Volume during audio playback

COLOR-CB: Color Cb (color-difference signal)

COLOR-CR: Color Cr (color-difference signal)

BRIGHTNESS: Brightness

VFX1: Visual effects 1

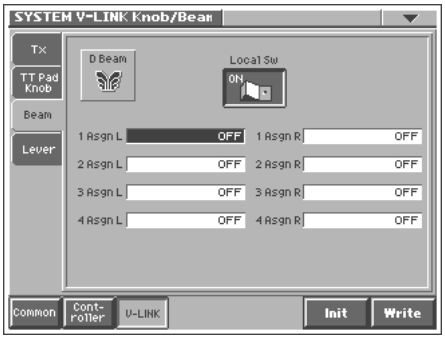
VFX2: Visual effects 2

VFX3: Visual effects 3

VFX4: Visual effects 4

OUTPUT-FADE: Output fade

Beam



Beam Local Sw (V-LINK D Beam Local Switch)

Specify whether the D Beam controller will be disconnected from the internal sound generator in V-Link mode (OFF) or not disconnected (ON).

Value: OFF, ON

D Beam 1–4 Assign L, R (V-LINK D Beam1–4 Assign L, R)

Specify the V-Link function that will be controlled when you operate the D Beam controller. Assign L is the left side, and Assign R is the right side.

Value

OFF: The D Beam controller will not be used.

PLAYBACK-SPEED: Playback speed

DISSOLVE-TIME: Dissolve time (time over which the image switches)

AUDIO LEVEL: Volume during audio playback

COLOR-CB: Color Cb (color-difference signal)

COLOR-CR: Color Cr (color-difference signal)

BRIGHTNESS: Brightness

VFX1: Visual effects 1

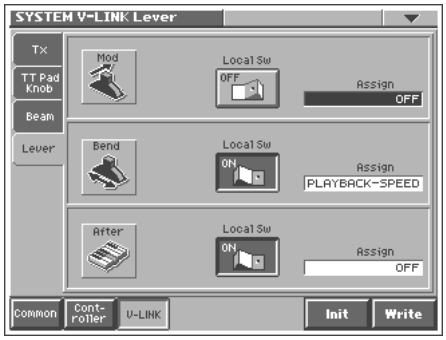
VFX2: Visual effects 2

VFX3: Visual effects 3

VFX4: Visual effects 4

OUTPUT-FADE: Output fade

Lever



Mod Local Sw (V-LINK Modulation Local Switch)

Specify whether the modulation lever will be disconnected from the internal sound generator in V-Link mode (OFF) or not disconnected (ON).

Value: OFF, ON

Mod Assign (V-LINK Modulation Assign)

Specify the V-Link function that will be controlled when you operate the modulation lever.

Value

OFF: The modulation lever will not be used.

PLAYBACK-SPEED: Playback speed

DISSOLVE-TIME: Dissolve time (time over which the image switches)

AUDIO LEVEL: Volume during audio playback

COLOR-CB: Color Cb (color-difference signal)

COLOR-CR: Color Cr (color-difference signal)

BRIGHTNESS: Brightness

VFX1: Visual effects 1

VFX2: Visual effects 2

VFX3: Visual effects 3

VFX4: Visual effects 4

OUTPUT-FADE: Output fade

Bend Local Sw (V-LINK Pitch Bend Local Switch)

Specify whether the pitch bend lever will be disconnected from the internal sound generator in V-Link mode (OFF) or not disconnected (ON).

Value: OFF, ON

Bend Assign (V-LINK Pitch Bend Assign)

Specify the V-Link function that will be controlled when you operate the pitch bend lever.

Value

OFF: The pitch bend lever will not be used.

PLAYBACK-SPEED: Playback speed

DISSOLVE-TIME: Dissolve time (time over which the image switches)

AUDIO LEVEL: Volume during audio playback

COLOR-CB: Color Cb (color-difference signal)

COLOR-CR: Color Cr (color-difference signal)

BRIGHTNESS: Brightness

VFX1: Visual effects 1

VFX2: Visual effects 2

VFX3: Visual effects 3

VFX4: Visual effects 4

OUTPUT-FADE: Output fade

After Local Sw (V-LINK Aftertouch Local Switch)

Specify whether keyboard aftertouch will be disconnected from the internal sound generator in V-Link Mode (OFF) or will not be disconnected (ON).

Value: OFF, ON

After Assign (V-LINK Aftertouch Assign)

Specify the V-Link function that will be controlled by keyboard aftertouch.

Value

OFF: The aftertouch will not be used.

PLAYBACK-SPEED: Playback speed

DISSOLVE-TIME: Dissolve time (time over which the image switches)

AUDIO LEVEL: Volume during audio playback

COLOR-CB: Color Cb (color-difference signal)

COLOR-CR: Color Cr (color-difference signal)

BRIGHTNESS: Brightness

VFX1: Visual effects 1

VFX2: Visual effects 2

VFX3: Visual effects 3

VFX4: Visual effects 4

OUTPUT-FADE: Output fade

Disk-Related Functions (Disk Mode)

Here you can load a project from disk into the internal work area (Load), or save the project that is in the work area (Save). You can also format a disk, or copy files and folders.

MEMO

In this chapter, we will collectively refer to internal memory and PC cards as "disks."

About Disk Utility

Disk Utility contains the following functions. In the DISK UTILITY MENU screen, you can select the desired function and execute it.

Load Project

This function loads project data from disk into the V-Synth's work area. → (p. 84)

Save Project

This function saves project data to disk. → (p. 85)

Clean Project

Clean up a disk by deleting unwanted files. → (p. 85)

Import Files

Import individual patch or wave files. → (p. 85)

Format

Initialize (format) a disk. → (p. 86)

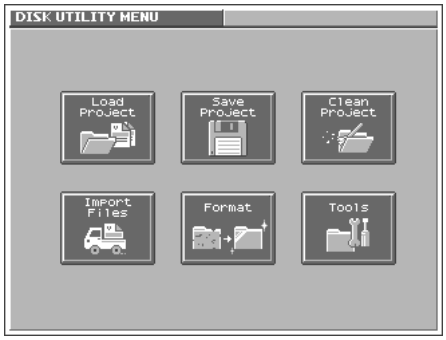
Tools

Copy or move a file or folder. → (p. 87)

Basic Disk Utility Operations

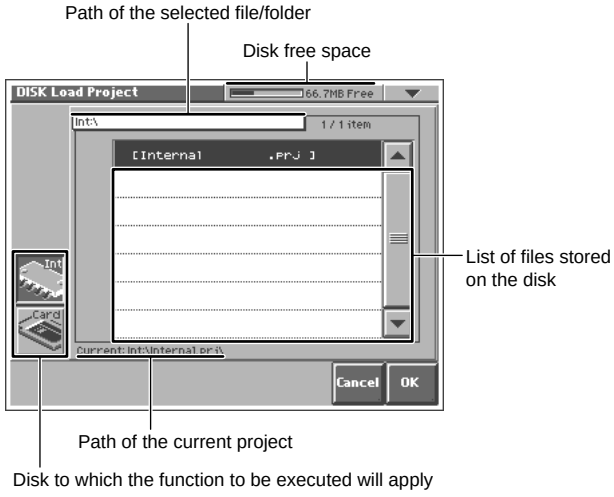
1. **If you are using a PC card, insert the appropriate PC card into the PC CARD slot.**
2. **Press [MODE] to access the V-SYNTH MODE MENU window.**
3. **Touch <Disk>.**

   The DISK UTILITY MENU screen appears.



4. **Touch the button for the function that you want to execute.**

   The screen for the function you intend to execute appears.



For details on operations in the Disk Utility screens, refer to the explanations on the following pages.

5. **Verify the contents of the screen, and touch <OK> to execute.**

   When the operation is completed, the display will briefly indicate "COMPLETED!."

HINT

To cancel the operation, touch <Cancel>.

6. **Press [EXIT] to exit Disk mode.**

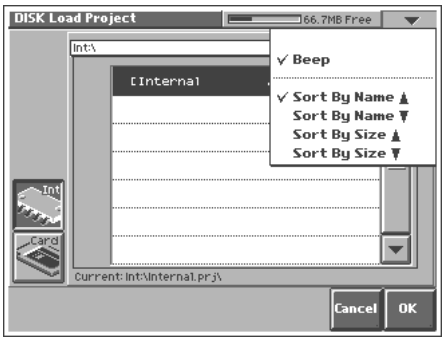
NOTE

Never turn off the power of the V-Synth while performing an operation in Disk mode. Doing so may destroy the files.

Sorting the Files Displayed in the File List

In each Disk Utility screen, you can change the order of the files displayed in the file list.

1. **In the upper right of the disk utility screen, touch <▼>.**
   A pulldown menu like the following appears.



2. **Choose the desired sorting order from the pull-down menu.**
   <Sort By Name ▲>: Sort in alphabetical order of file name.
   <Sort By Name ▼>: Sort in reverse alphabetical order of file name.
   <Sort By Size ▲>: Sort in ascending order of file size.
   <Sort By Size ▼: Sort in descending order of file size.

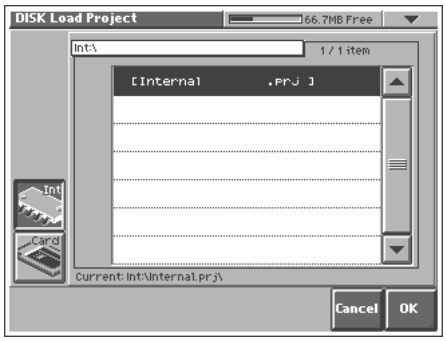
Loading a Project from Disk into the V-Synth (Load Project)

This function loads a project on disk into the V-Synth's work area.

NOTE

When a project is loaded, work area will be rewritten. If work area contains important data, you must save it to disk before you load other data.

1. **Access the DISK UTILITY MENU screen (p. 83).**
2. **Touch <Load Project>.**
   The Disk Load Project screen appears.



3. **To load from internal memory, touch <Int>. To load from a PC card, touch <Card>. Then select the project that you want to load.**
4. **Touch <OK>.**
   A WARNING window like the following appears.

HINT

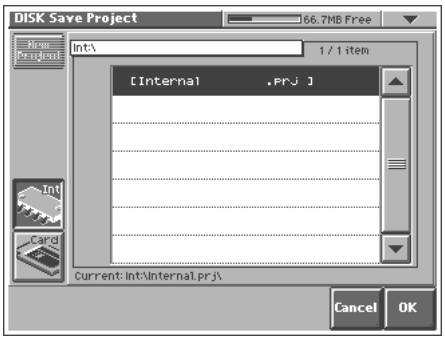
If you want to cancel the procedure at this point, touch <CANCEL>.

5. **Touch <EXECUTE> to execute the operation.**

Saving Project on Disk (Save Project)

Save the project in the work area to disk.

1. **Access the DISK UTILITY MENU screen (p. 83).**
2. **Touch <Save Project>.**
   The Disk Save Project screen appears.



3. **To save to internal memory, touch <Int>. To save to PC card, touch <Card>. Then select the save-destination project.**

HINT

If you want to save the data as a new project, touch <New Project>. The PROJECT Name window will appear. Assign a name to the new project.

4. **Touch <OK>.**
   A WARNING window like the following appears.

HINT

If you want to cancel the procedure at this point, touch <CANCEL>.

5. **Touch <EXECUTE> to execute the operation.**

Delete Unneeded Files (Clean Project)

This lets you clean up the contents of the disk by deleting files that cannot be used by the V-Synth or waves that are not used by patches. Executing this operation can increase the free space available on the disk. If there are any unused patch / wave numbers, subsequent patches / waves will be automatically renumbered forward.

1. **Access the DISK UTILITY MENU screen (p. 83).**
2. **Touch <Clean Project>.**
   The DISK Clean Project screen appears.

HINT

If you want to cancel the procedure at this point, touch <CANCEL>.

3. **Touch <EXECUTE> to execute the operation.**

Importing Individual Patch or Wave Files (Import Files)

You can import individual patch or wave files or folders into the work area of the V-Synth.

NOTE

The data will be imported into unused patch / wave numbers. Importing is not possible if there are no empty patches or waves.

1. **Access the DISK UTILITY MENU screen (p. 83).**
2. **Touch <Import Files>.**
   The Disk Import Files screen appears.

3. **Touch <Patch> if you want to import a patch, or touch <Wave> if you want to import a wave.**

4. Touch <Preset> if you want to import from preset memory, touch <Int> if you want to import from internal memory, or touch <Card> if you want to import from a PC card.

5. From the file list, select the file/folder that you want to import.

Here you can use the following functions. Touch the appropriate button to execute.

Prevw: Preview (audition) the selected file (.w00 / .wav / .aif).

Info: View information for the selected file.

Mark All: Mark all files / folders in the file list.

Mark: Mark the selected file / folder in the file list.

Open: Open the selected folder.

Close: Move to the next higher folder.

MEMO

If you have selected a patch whose oscillator type is "PCM," the wave used by that patch will also be imported.

6. Touch <OK>.

A WARNING window like the following appears.

HINT

If you want to cancel the procedure at this point, touch <CANCEL>.

7. Touch <EXECUTE> to execute the operation.

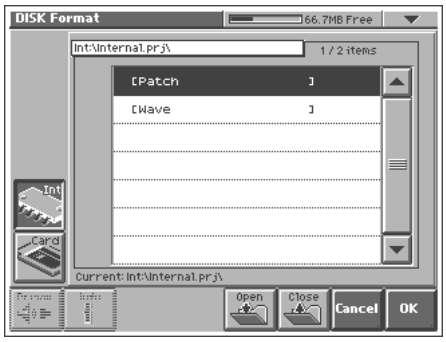
Initializing a Disk (Format)

You can initialize (format) a disk, erasing all data from it.

1. Access the DISK UTILITY MENU screen (p. 83).

2. Touch <Format>.

The Disk Format screen appears.



3. If you want to format the internal memory, touch <Int>. If you want to format a PC card, touch <Card>.

Here you can use the following functions. Touch the appropriate button to execute.

Prevw: Preview (audition) the selected file (.w00 / .wav / .aif).

Info: View information for the selected file.

Mark All: Mark all files / folders in the file list.

Mark: Mark the selected file / folder in the file list.

Open: Open the selected folder.

Close: Move to the next higher folder.

4. When you format a PC card, the VOLUME Name window will appear, allowing you to assign a new volume name.

5. Touch <OK>.

A WARNING window like the following appears.

HINT

If you want to cancel the procedure at this point, touch <CANCEL>.

6. Touch <EXECUTE> to execute the operation.

Functions Related to Files and Folders (Tools)

You can manage files or folders by copying or moving them.

Copying Files/Folders (Copy)

1. **Access the DISK UTILITY MENU screen (p. 83).**
2. **Touch <Tools>.**
   The Disk Tools screen appears.

3. **Touch <Copy>.**
4. **If you want to copy from internal memory, touch <Int>. If you want to copy from a PC card, touch <Card>.**
5. **In the file list, select the file or folder that you want to copy.**
   Here you can use the following functions. Touch the appropriate button to execute.
   Prevw: Preview (audition) the selected file (.w00/.wav/.aif).
   Info: View information for the selected file.
   Mark All: Mark all files/folders in the file list.
   Mark: Mark the selected file/folder in the file list.
   Open: Open the selected folder.
   Close: Move to the next higher folder.
6. **Touch <OK>.**
   The Disk Tools Copy Destination screen appears.

7. **If you want to copy to internal memory, touch <Int>. If you want to copy to a PC card, touch <Card>.**
8. **In the file list, select the copy-destination file or folder.**
   Here you can use the following functions. Touch the appropriate button to execute.
   Prevw: Preview (audition) the selected file (.w00/.wav/.aif).
   Info: View information for the selected file.
   Open: Open the selected folder.
   Close: Move to the next higher folder.
9. **Touch <OK>.**
   A WARNING window like the following appears.

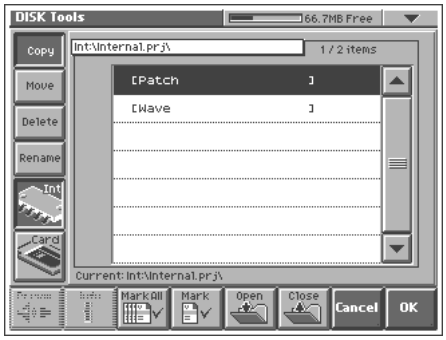
HINT

If you want to cancel the procedure at this point, touch <CANCEL>.

10. **Touch <EXECUTE> to execute the operation.**

Moving Files/Folders (Move)

1. **Access the DISK UTILITY MENU screen (p. 83).**
2. **Touch <Tools>.**
   The Disk Tools screen appears.



3. **Touch <Move>.**
4. **If you want to move a file or folder from internal memory, touch <Int>. If you want to move it to a PC card, touch <Card>.**

5. In the file list, select the file or folder that you want to move.

Here you can use the following functions. Touch the appropriate button to execute.

Prevw: Preview (audition) the selected file (.w00 / .wav / .aif).

Info: View information for the selected file.

Mark All: Mark all files / folders in the file list.

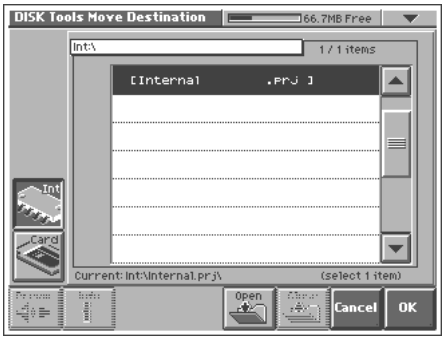
Mark: Mark the selected file / folder in the file list.

Open: Open the selected folder.

Close: Move to the next higher folder.

6. Touch <OK>.

The Disk Tools Move Destination screen appears.



7. If you want to move the file or folder to internal memory, touch <Int>. If you want to move it to a PC card, touch <Card>.

8. In the file list, select the move-destination file or folder.

Here you can use the following functions. Touch the appropriate button to execute.

Prevw: Preview (audition) the selected file (.w00 / .wav / .aif).

Info: View information for the selected file.

Open: Open the selected folder.

Close: Move to the next higher folder.

9. Touch <OK>.

A WARNING window like the following appears.

HINT

If you want to cancel the procedure at this point, touch <CANCEL>.

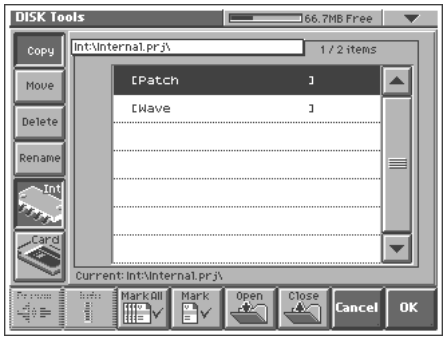
10. Touch <EXECUTE> to execute the operation.

Deleting Files / Folders (Delete)

1. Access the DISK UTILITY MENU screen (p. 83).

2. Touch <Tools>.

The Disk Tools screen appears.



3. Touch <Delete>.

4. If you want to delete a file or folder from internal memory, touch <Int>. If you want to delete it from a PC card, touch <Card>.

5. In the file list, select the file or folder that you want to delete.

Here you can use the following functions. Touch the appropriate button to execute.

Prevw: Preview (audition) the selected file (.w00 / .wav / .aif).

Info: View information for the selected file.

Mark All: Mark all files / folders in the file list.

Mark: Mark the selected file / folder in the file list.

Open: Open the selected folder.

Close: Move to the next higher folder.

6. Touch <OK>.

A WARNING window like the following appears.

HINT

If you want to cancel the procedure at this point, touch <CANCEL>.

7. Touch <EXECUTE> to execute the operation.

Renaming a Files/Folders (Rename)

1. **Access the DISK UTILITY MENU screen (p. 83).**
2. **Touch <Tools>.**

   The Disk Tools screen appears.

3. **Touch <Rename>.**
4. **If you want to rename a file or folder in internal memory, touch <Int>. If you want to rename a file or folder in a PC card, touch <Card>.**
5. **In the file list, select the file or folder that you want to rename.**

   Here you can use the following functions. Touch the appropriate button to execute.

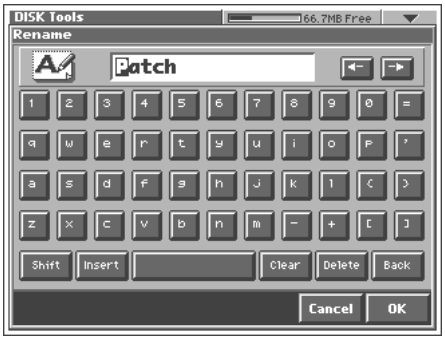
   Prevw: Preview (audition) the selected file (.w00/.wav/.aif).

   Info: View information for the selected file.

   Open: Open the selected folder.

   Close: Move to the next higher folder.
6. **Touch <OK>.**

   The Rename window appears.



7. **Touch the on-screen alphabetic or numeric keys to enter the new name in the text box.**

   The on-screen keys have the following functions.

   <←><→>: Move the cursor in the text box to the desired input location.

   <SHIFT>: Turn this on when you want to input uppercase letters or symbols.

   <Insert>: Turn this on when you want to insert a character at the cursor location.

   <Clear>: Erases all characters in the text box.

   <Delete>: Deletes the character at the cursor location.

   <Back>: Deletes the character that precedes the cursor location.

HINT

You can also move the input location cursor by pressing the [◄][►] cursor buttons. Pressing [▲] will change the character at the cursor location to uppercase, and pressing [▼] will change it to lowercase.

8. **When you have finished inputting, touch <OK> to execute the operation.**

Connecting to Your Computer via USB (USB Mode)

About USB Functions

The V-Synth has two modes of USB functionality: **storage mode** for transferring files, and **MIDI mode** for sending and receiving MIDI messages. You must switch between these two modes on the V-Synth; they cannot be used simultaneously.

MEMO

Each mode can be used with the following operating systems.

- Windows 98 or later
- Mac OS 9.04 or later

NOTE

The USB mode (file transfer / MIDI communication) must be switched before you connect the V-Synth with your computer. For the procedure, refer to **"USB Setup"** (p. 76).

Transferring Files to or from Your Computer (Storage Mode)

By connecting the V-Synth with your computer via a USB cable, you can transfer files such as projects, patches, and wave data from internal memory or a PC card to and from the hard disk or other media of your computer, in order to back up your data.

You can use software on your computer to edit wave data you've created on the V-Synth. Conversely, wave data that you've created on your computer can be used on the V-Synth.

In this way, USB Storage mode lets you transfer files such as patch and waves to or from a connected computer.

NOTE

Never connect or disconnect the USB cable or turn off the power while in USB mode or while data is being transferred.

Selecting USB Storage Mode

You must switch the V-Synth to USB Storage mode before you connect the V-Synth and your computer with a USB cable.

MEMO

With the factory settings, the V-Synth is set to USB Storage mode.

1. **Press [MODE] to access the V-SYNTH MODE MENU window.**
2. **Touch <SYSTEM>.**

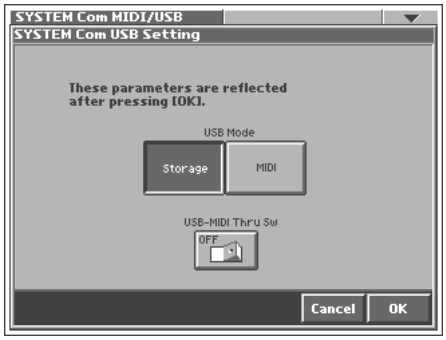
   The SYSTEM Com Master screen appears.

3. **In the left side of the screen, touch the <MIDI USB> tab.**

   The SYSTEM Com MIDI / USB screen appears.

4. **Touch <USB Setup>.**

   The SYSTEM Com USB Setting window appears.



5. **Touch USB Mode <Storage>.**

   USB Storage mode will be selected.

6. **Touch <OK>.**
7. **If a WARNING window like the following appears, touch <ACCEPT> to close the window.**

8. **In the lower right of the SYSTEM Com MIDI/USB screen, touch <Write> to save the system settings.**

For the rest of the procedure, read either "Windows Me/2000/XP users" or "Macintosh users" as appropriate.
Windows users: Continue reading from this page.
Macintosh users: Read from page 93.

Windows Users

● Windows 98/98SE Users

You must install the driver from the included CD-ROM into your computer. Be sure to read the Readme file on the CD-ROM before installation.

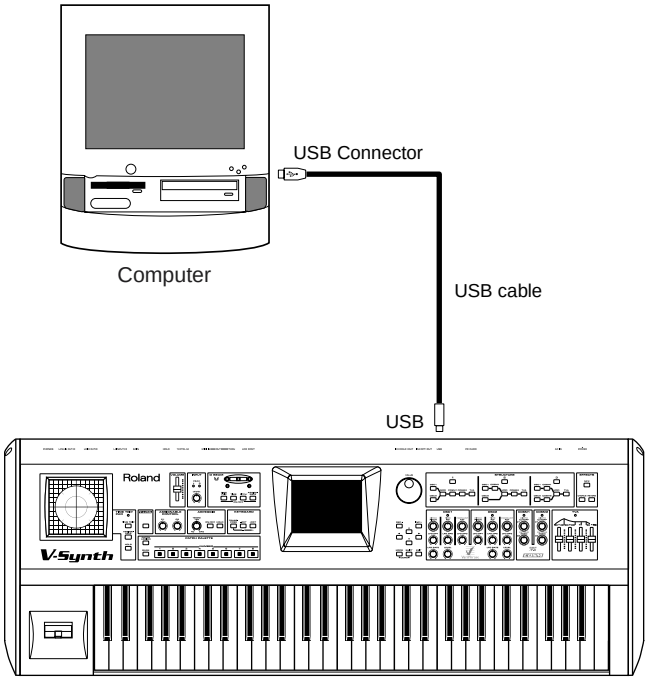
→ **\Storage\Wn98\Readme_e.htm**

● Windows XP/2000/Me or later Users

Installation is completely automatic.

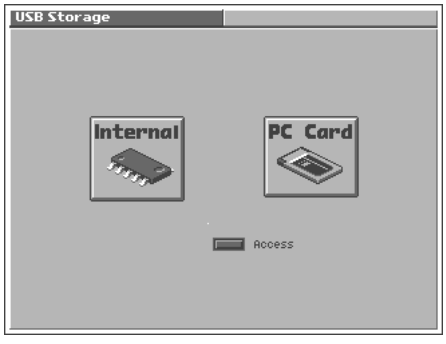
Connecting the V-Synth to Your Computer

1. **Make sure that the power of the V-Synth is turned off.**
2. **Start up your computer.**
3. **Connect the V-Synth and your computer using a USB cable.**



V-Synth

4. **Turn on the power of V-Synth.**
5. **If you are using a PC card, insert that PC card into the PC CARD slot.**
6. **Press [MODE] to access the V-SYNTH MODE MENU window.**
7. **Touch <USB>.**
   The USB Storage screen appears.



NOTE

If the USB Mode (p. 76) is set to "MIDI," you will be unable to select <USB> in the V-SYNTH MODE MENU window. Set the USB Mode to "Storage."

8. **Touch <Internal> or <PC Card> to establish the connection with your computer.**

   <Internal>: Mounts the internal memory as an external drive on your computer.

   <PC Card>: Mounts the PC card as an external drive on your computer.

NOTE

You cannot select "PC Card" unless a PC card is inserted in the PC CARD slot.

9. **When the USB connection is established, the driver installation will begin. A dialog box of "Found new hardware" will appear near the Windows task tray.**

   Installation is completely automatic. Please wait for it to be completed.

10. **When installation is completed, open My Computer and you will see a new drive icon.**

    In Windows Me/2000/98/98SE, a drive icon named "Removable Disk" will appear. In Windows XP, the drive icon will be named "V-SYNTH" if you selected "Internal." If you selected "PC Card," it will show the volume label that you assigned when formatting the card. If you formatted the card on the V-Synth, the volume label will be "PC CARD."

11. **Once the V-Synth is connected, you can transfer files by operating your computer.**

NOTE

Do not perform the following actions while "Access" (the access indicator) in the USB Storage screen is blinking. Doing so may cause your computer to freeze, and may also damage the files in the drive.

- Do not disconnect the USB cable
- Do not remove the PC card while it is being accessed
- Do not suspend (standby), hibernate, restart, or shut down your computer
- Do not turn off the power of V-Synth.

Switching the Connected Drive

When USB-connected, here's how to switch between "Internal" (the V-Synth's internal memory) and "PC Card" (the PC card inserted in the V-Synth).

1. **In the V-Synth's USB Storage screen, make sure that "Access" (the access indicator) is not blinking.**
2. **In My Computer, right-click the "Removable Disk" icon and execute "Eject."**
3. **In the V-Synth's USB Storage screen, touch <Internal> or <PC Card> to change drives.**

Closing the USB Storage Screen

1. **In the V-Synth's USB Storage screen, make sure that "Access" (the access indicator) is not blinking.**
2. **In My Computer, right-click the "Removable Disk" icon and execute "Eject."**
3. **Press [EXIT].**

   The USB Storage screen will close.

NOTE

If you press [EXIT] without performing the "Eject" operation on your computer, a WARNING window like the following will appear.

Touch <EXECUTE> to close this window only if you are unable to perform the "Eject" operation on your computer.

Canceling the USB Connection

Once you have connected the V-Synth and your computer in Storage mode, you must cancel the USB connection on your computer before you do either of the following actions:

- Disconnect the USB cable
- Turn off the V-Synth's power while the USB cable is connected

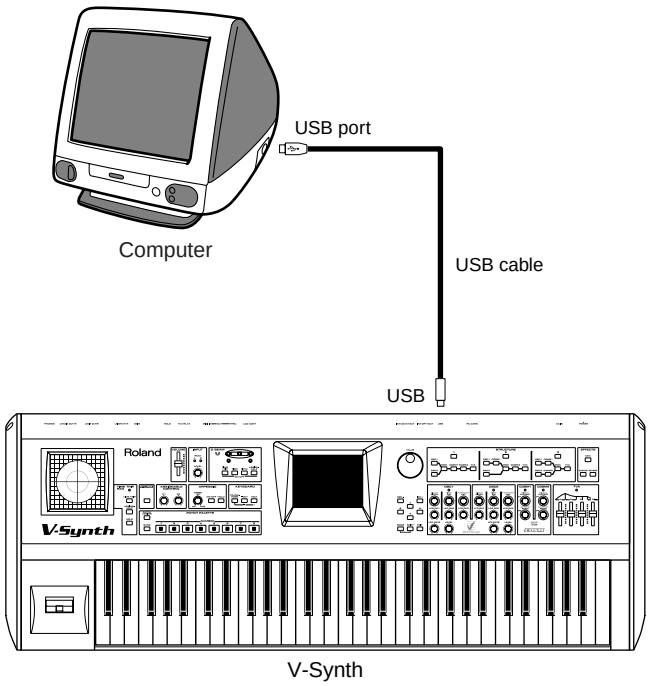
1. **Use "Eject hardware" (displayed in the task bar in the lower right of the screen) to cancel the connection with the V-Synth.**

   The "Removable Disk" drive icon will disappear from My Computer, and the USB connection will be cancelled.

Macintosh Users

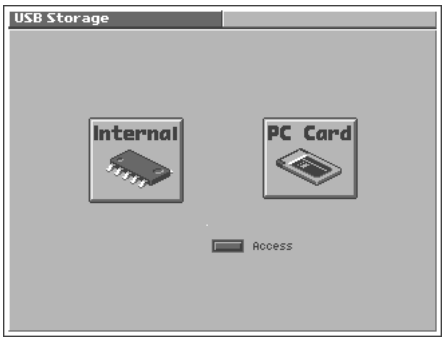
Connecting the V-Synth to Your Computer

1. **Make sure that the power of the V-Synth is turned off.**
2. **Start up your computer.**
3. **Connect the V-Synth and your computer using a USB cable.**



V-Synth

4. **Turn on the power of V-Synth.**
5. **If you are using a PC card, insert that PC card into the PC CARD slot.**
6. **Press [MODE] to access the V-SYNTH MODE MENU window.**
7. **Touch <USB>.**
   The USB Storage screen appears.



NOTE

If the USB Mode (p. 76) is set to "MIDI," you will be unable to select <USB> in the V-SYNTH MODE MENU window. Set the USB Mode to "Storage."

8. **Touch <Internal> or <PC Card> to establish the connection with your computer.**
   <Internal>: Mounts the internal memory as an external drive on your computer.
   <PC Card>: Mounts the PC card as an external drive on your computer.

NOTE

You cannot select "PC Card" unless a PC card is inserted in the PC CARD slot.

9. **When the USB connection is established, a new drive icon will appear on your desktop.**
   If you have selected "Internal," a drive icon named "V-SYNTH" will appear. If you selected "PC Card," it will show the volume label that you assigned when formatting the card. If you formatted the card on the V-Synth, the volume label will be "PC CARD."
10. **Once the V-Synth is connected, you can transfer files by operating your computer.**

NOTE

Do not perform the following actions while "Access" (the access indicator) in the USB Storage screen is blinking. Doing so may cause your computer to freeze, and may also damage the files in the drive.

- Do not disconnect the USB cable
- Do not remove the PC card while it is being accessed
- Do not sleep, restart, or shut down your computer
- Do not turn off the power of V-Synth.

Switching the Connected Drive

When USB-connected, here's how to switch between "Internal" (the V-Synth's internal memory) and "PC Card" (the PC card inserted in the V-Synth).

1. **In the V-Synth's USB Storage screen, make sure that "Access" (the access indicator) is not blinking.**
2. **Select the V-Synth drive icon on your desktop, and either choose "Eject" from the "Special" menu, or drag the icon into the trash.**
3. **In the V-Synth's USB Storage screen, touch <Internal> or <PC Card> to change drives.**

Closing the USB Storage Screen

1. **In the V-Synth's USB Storage screen, make sure that "Access" (the access indicator) is not blinking.**
2. **Select the V-Synth drive icon on your desktop, and either choose "Eject" from the "Special" menu, or drag the icon into the trash.**
3. **Press [EXIT].**

   The USB Storage screen will close.

NOTE

If you press [EXIT] without performing the "Eject" operation on your computer, a WARNING window like the following will appear.

Touch <EXECUTE> to close this window only if you are unable to perform the "Eject" operation on your computer.

Canceling the USB Connection

Once you have connected the V-Synth and your computer in Storage mode, you must cancel the USB connection on your computer before you do either of the following actions:

- Disconnect the USB cable
- Turn off the V-Synth's power while the USB cable is connected

1. **Select the V-Synth drive icon on your desktop, and either choose "Eject" from the "Special" menu, or drag the icon into the trash.**

   The V-Synth drive icon will disappear from the desktop, and the USB connection will be cancelled.

Examples of Using Storage Mode

Backing Up Patch and Wave Data (Project) from the V-Synth

When using USB in Storage mode, the data within the V-Synth may be damaged if you operate your computer incorrectly or if your computer crashes. As a precaution against such occurrences, we recommend that you create a backup as described below.

Backing Up the V-Synth's Internal Data onto Your Computer

1. **Use a USB cable to connect the V-Synth to your computer as described in "Connecting the V-Synth to your computer" (p. 91, p. 93).**
2. **Using your computer, copy the V-Synth's *****.prj folder onto a drive (e.g., hard disk) of your computer.**
3. **Cancel the USB connection (p. 92, p. 94).**

Loading Backup Data from Your Computer into the V-Synth

1. **Use a USB cable to connect the V-Synth to your computer as described in "Connecting the V-Synth to your computer" (p. 91, p. 93).**
2. **Using your computer, copy the *****.prj folder that you previously saved on your computer to the *****.prj folder (overwriting it) within the V-Synth.**
3. **Cancel the USB connection (p. 92, p. 94).**

Loading an Audio File (WAV/AIFF format) from Your Computer into the V-Synth (Import)

WAV/AIFF format audio files created by another device can be loaded into the V-Synth and used in the same way as data you've sampled on the V-Synth.

1. **Use a USB cable to connect the V-Synth to your computer as described in "Connecting the V-Synth to your computer" (p. 91, p. 93).**
2. **From your computer, copy (drag & drop) the audio file saved on your computer into the *****.prj folder within the V-Synth.**
3. **Cancel the USB connection (p. 92, p. 94).**
4. **Use the Import menu (Import Files, p. 85) in the V-Synth's Disk mode to import the file you copied in step 2.**
5. **Use the Sample mode's Preview function (p. 65) to verify that the imported data will sound correctly.**
6. **Use the Sample mode's Save command (or the Disk mode's Save Project command) to save the project.**
7. **Use the Disk mode's Tools menu (Tools, p. 87) to delete the data you copied in step 2.**

The V-Synth's File Structure

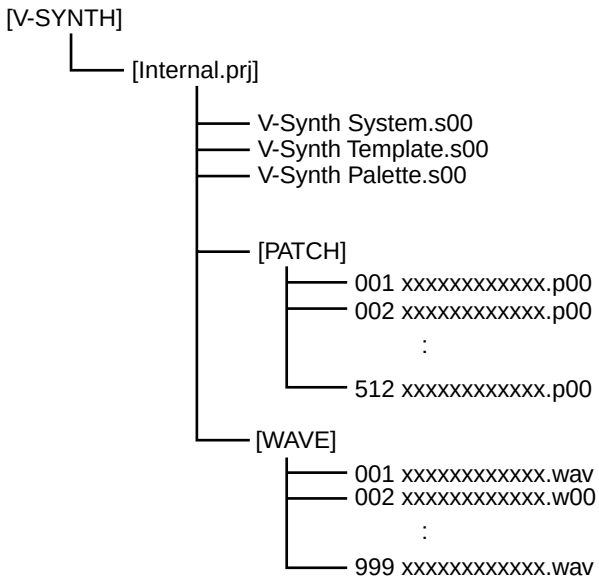
As seen from your computer, the V-Synth's file structure is as follows.

Do not perform operations on your computer to erase (format) or rename these folders or files.

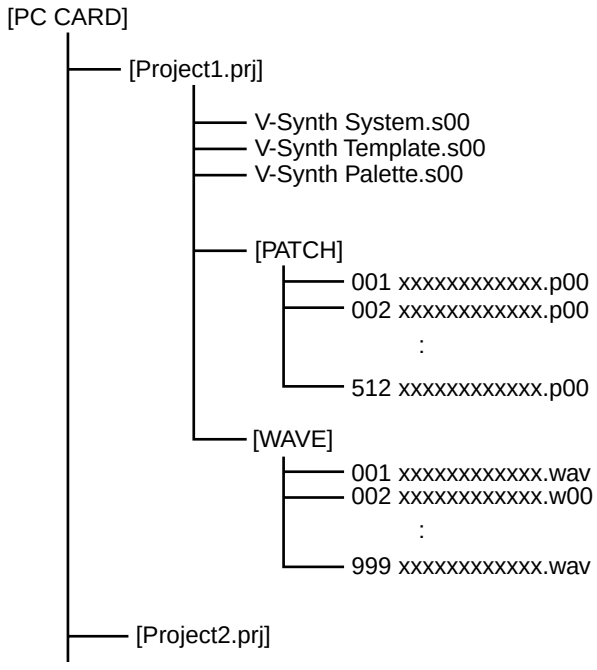
If the V-Synth stops operating correctly, break the USB connection between the computer and the V-Synth (p. 92, p. 94), and then execute the Factory Reset command (p. 98).

This will erase all the data that has been saved on the V-Synth. As a precaution against such occurrences, we recommend that you always make a backup of your data (p. 94).

Internal Memory



PC Card



Exchanging MIDI Messages with Your Computer (MIDI Mode)

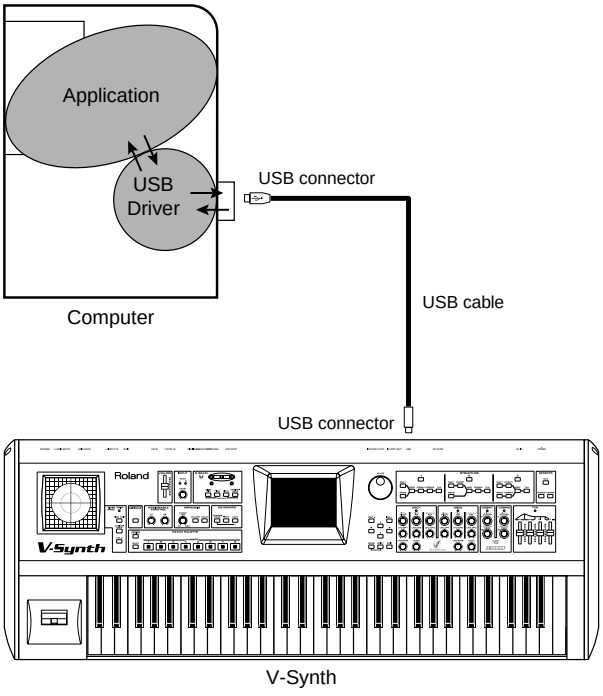
Driver Installation and Settings

In order to use the V-Synth as a USB MIDI device from your computer, you must first install the USB MIDI driver. The USB MIDI driver is on the included "V-Synth Driver CD-ROM."

What is the USB MIDI Driver?

The USB MIDI Driver is a software which passes data between the V-Synth and the application (sequencer software, etc.) that is running on the USB-connected computer.

The USB MIDI Driver sends data from the application to the V-Synth, and passes data from the V-Synth to the application.



In order to use USB in MIDI mode, you must install the driver from the included CD-ROM into your computer.

The correct driver and the installation procedure will depend on your system and on the other programs you are using. Be sure to read the Readme file on the CD-ROM before installation.

Windows XP / 2000
→ **\Midi\Usb_xp2k\Readme_e.htm**

Windows Me / 98 / 98SE
→ **\Midi\Usb_me98\Readme_e.htm**

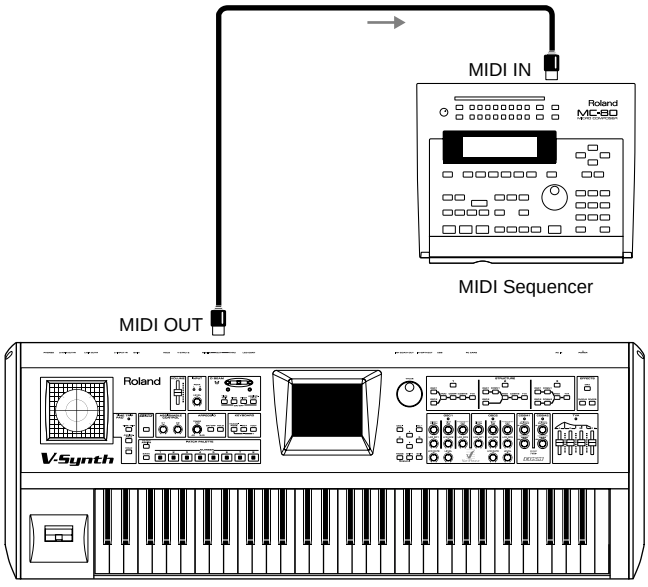
Mac OS 9 (9.04 or later)
→ **\OS_9\English\Readme_OMS-E.HTM**
→ **\OS_9\English\Readme_FM-E.HTM**

Mac OS X
→ **\OS_X\Readme-E.HTM**

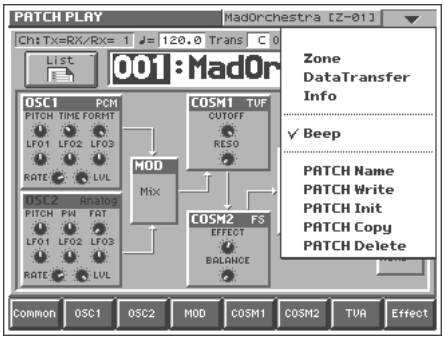
Other Functions

Transmitting Data to an External MIDI Device (Data Transfer)

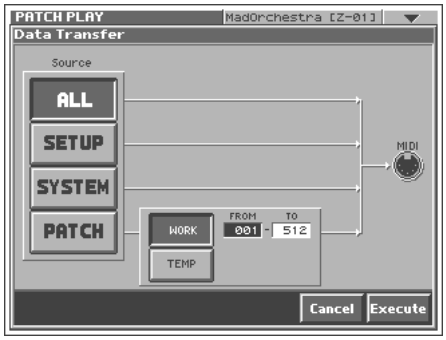
Patch, setup and system settings will be transmitted to an external MIDI device. This operation is called **bulk dump**. Use this operation when you want to connect another V-Synth and play it using the same settings, or to save your data on an external MIDI device as a precaution against possible loss of sound data or system settings.
To transmit data to an external MIDI device, connect the external MIDI device and V-Synth as shown in the diagram.



1. Touch <▼> in the upper right of the screen.
A pulldown menu appears.



2. In the pulldown menu, touch <Data Transfer>.
The Data Transfer window appears.



3. In "Source," select the type of data that you want to transmit.
<ALL>: Patch, setup, system
<SETUP>: Setup
<SYSTEM>: System
<PATCH>: Patch
If you selected <PATCH>, specify the patch that is to be sent.
<WORK>: Transmit patches from the work area. Use the "FROM" - "TO" fields to specify the range of patch numbers (001–512) that will be transmit.
<TEMP>: Transmit patch from the temporary area.

4. Set the external MIDI device so that it will be ready to receive data, and touch <Execute> to execute data transmission.
While the data is being transmitted, the display will indicate "Transmitting..." When "COMPLETED!" is displayed, the transmission has been completed.

HINT
To halt during transmission, touch <ABORT>.

Reset to Default Factory Settings (Factory Reset)

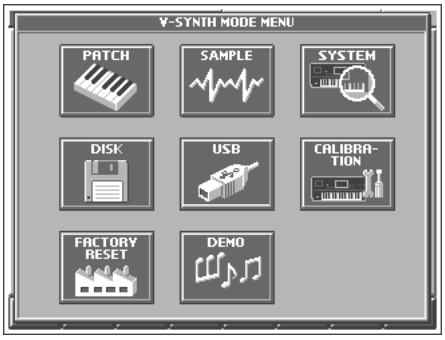
This restores all data in the V-Synth to the factory-set condition (Factory Reset).

NOTE

If there is important data you've created that's stored in the V-Synth's internal memory, all such data is discarded when a Factory Reset is performed. If you want to keep the existing data, save it on a PC card (p. 85), USB backing up onto a computer (p. 94) or transmit it to an external MIDI device and save it (p. 97).

1. Press [MODE].

The V-SYNTH MODE MENU window appears.



2. Touch <FACTORY RESET>.

The Factory Reset screen appears.

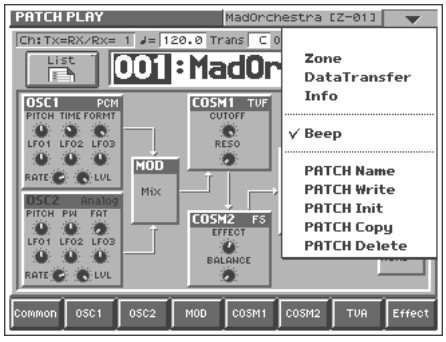
3. Touch <Execute> to execute the Factory Reset.

When the display indicates "COMPLETED!," the factory reset operation has been completed.

Viewing Various Information (Info)

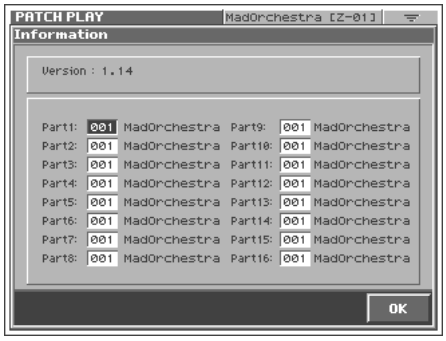
1. In the upper right of the screen, touch <▼>.

A pulldown menu appears.



2. In the pulldown menu, touch <Info>.

The PATCH Information window appears.



This window shows the following information.

Version: The V-Synth's program version

Part: The number and name of the patch assigned to each part

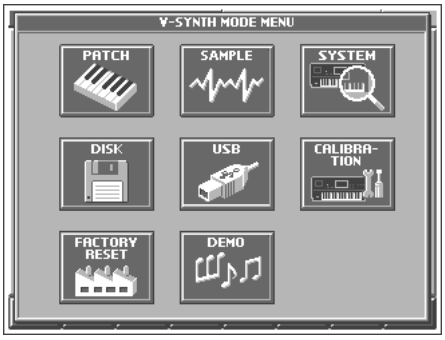
3. When you have finished viewing the information, touch <OK> to close the window.

Adjusting the Sensitivity of the Touch Screen/Time Trip Pad/D Beam Controller (Calibration Mode)

Displaying the CALIBRATION MENU Screen

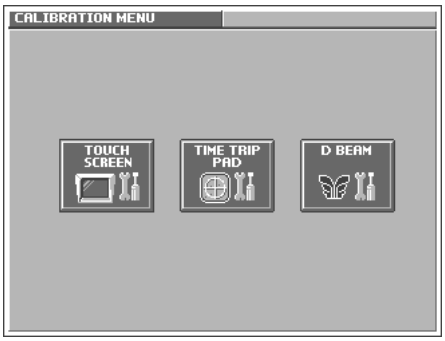
1. Press [MODE].

The V-SYNTH MODE MENU window appears.



2. Touch <CALIBRATION>.

The CALIBRATION MENU screen appears.

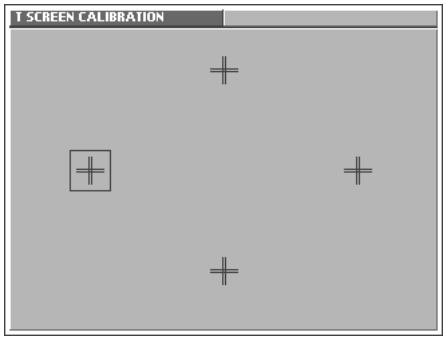


Adjusting the Sensitivity of the Touch Screen

Perform this adjustment if the touch panel no longer responds as you expect.

1. In the CALIBRATION MENU screen, touch <TOUCH SCREEN>.

The T SCREEN CALIBRATION screen appears.



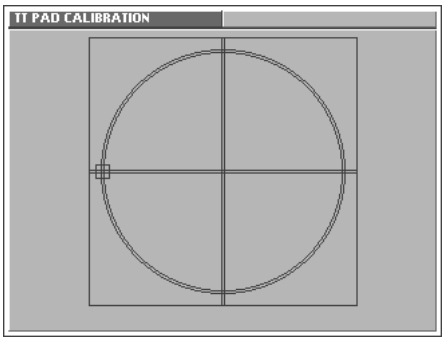
2. Touch the center of "+" symbol indicated by the square symbol in the screen, in the following order: left → top → right → bottom.

When you have touched all four points, the screen will close, and the sensitivity of the touch screen will be calibrated.

Adjusting the Sensitivity of the Time Trip Pad

Perform this adjustment if the Time Trip pad no longer responds as you expect.

1. **In the CALIBRATION MENU screen, touch <TIME TRIP PAD>.**
   The TT PAD CALIBRATION screen appears.

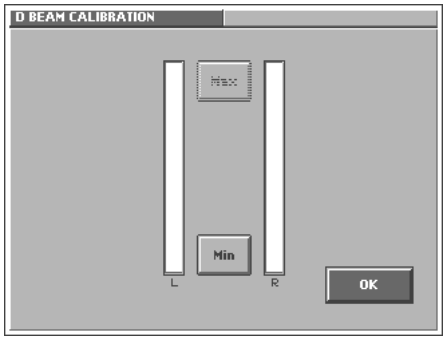


2. **On the Time Trip pad, touch the points indicated by the square symbol in the screen, in the following order: left → top → right → bottom.**
   When you have touched all four points, the screen will close, and the sensitivity of the Time Trip pad will be calibrated.

Adjusting the Sensitivity of the D Beam Controller

Perform this adjustment if the D Beam controller is functioning incorrectly, such as responding even though you have not operated it.

1. **In the CALIBRATION MENU screen, touch <D BEAM>.**
   The D Beam CALIBRATION screen appears.



   When you place your hand over the D Beam controller, the “L” or “R” level meter in the screen will move upward or downward.

2. **First specify the location at which the D Beam controller will begin responding (i.e., the minimum value).**
   Move your hand toward the D Beam controller, and touch <Min> at the point where you want the controller to begin responding.

3. **Next specify the location at which the D Beam controller will reach the peak (i.e., the maximum value).**
   Continue moving your hand toward the D Beam controller, and touch <Max> at the point where you want the peak response to occur.

4. **While watching the level meter in the screen, raise and lower your hand to check the response of the D Beam controller.**

5. **If you are satisfied with the response, touch <OK>.**
   The sensitivity of the D Beam controller will be calibrated.

Appendices

Parameter List

Patch Parameters

Common Group (p. 36)

Parameter		Value
General		
Structure Type		TYPE1, TYPE2, TYPE3
Portamento	Portamento Switch	OFF, ON
Mode	Portamento Mode	NORMAL, LEGATO
Type	Portamento Type	RATE, TIME
Time	Portamento Time	0–127
Time Velo Sens	Portamento Time Velocity Sensitivity	-63– +63
Mono / Poly		Mono, Poly
Legato	Legato Switch	OFF, ON
D Beam/Bender		
Octave Shift		-3– +3
D Beam	D Beam Type	OFF, Time Trip, Time, Pitch, Assignable
Bend Range Up	Pitch Bend Range Up	0–48
Bend Range Down	Pitch Bend Range Down	0–48
TT Pad		
Mode	Time Trip Pad Mode	XY, TT
Hold	Time Trip Pad Hold Switch	OFF, ON
Matrix Ctrl		
Source	Matrix Control Source	OFF, CC01–31, CC33–95, BEND, AFT, +PAD-X / Y, PAD-X / Y, TRIP-R, BEAM-L / R, KNOB1 / 2, VELO, KEYF
Sens	Matrix Control Sens	-63– +63
Destination 1, 2	Matrix Control Destination 1, 2	(*)
Arpeggio		
Arpeggio Switch		OFF, ON
Patch Tempo		20.0–250.0
Hold	Arpeggio Hold Switch	OFF, ON
Octave Range	Arpeggio Octave Range	-3– +3
KBD Velo	Arpeggio Keyboard Velocity	REAL, 1–127
Duration	Arpeggio Duration	0–100 %
Motif	Arpeggio Motif	UP, DOWN, UP&DOWN, RANDOM, NOTE ORDER, RHYTHM, PHRASE, AUTO
Shuffle Rate	Arpeggio Shuffle Rate	0–100 %
Shuffle Resolution	Arpeggio Shuffle Resolution	(Sixteenth note), (Eighth note)
Tune		
Patch Coarse Tune		-48– +48
Patch Fine Tune		-50– +50
Scale Tune	Scale Tune Switch	OFF, ON
Scale Tune C–B		-100– +100
Zone		
Current Zone		Zone 01–16
Zone 01–16 Range Hi		C-1–G9

* OSC1 / 2-PITCH, OSC1 / 2-TIME / PW, OSC1 / 2-FORMA / FAT, OSC1 / 2-LVL, OSC1 / 2-PENV-ATK, OSC1 / 2-PENV-DCY, OSC1 / 2-PENV-REL, OSC1 / 2-TENV-ATK, OSC1 / 2-TENV-DCY, OSC1 / 2-TENV-REL, OSC1 / 2-FENV-ATK, OSC1 / 2-FENV-DCY, OSC1 / 2-FENV-REL, OSC1 / 2-AENV-ATK, OSC1 / 2-AENV-DCY, OSC1 / 2-AENV-REL, OSC1 / 2-LFO-RATE, OSC1 / 2-LFO-PCH, OSC1 / 2-LFO-TM / PW, OSC1 / 2-LFO-FR / FT, OSC1 / 2-LFO-LVL, CSM1 / 2-PRM1, CSM1 / 2-PRM2, CSM1 / 2-ENV1-ATK, CSM1 / 2-ENV1-DCY, CSM1 / 2-ENV1-REL, CSM1 / 2-ENV2-ATK, CSM1 / 2-ENV2-DCY, CSM1 / 2-ENV2-REL, CSM1 / 2-LFO-RATE, CSM1 / 2-LFO-PRM1, CSM1 / 2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, MFX-SEND, CHO-SEND, REV-SEND, MFX-PRM1–3, TVA-PAN

OSC1/OSC2 Group (p. 42)

Parameter		Value
Oscillator Switch		OFF, ON
OSC Type		
Oscillator Type		ANALOG, PCM, EXT IN
Wave Gain		-12– +12 dB
Waveform	Analog Oscillator Waveform	SAW, SQR, TRI, SINE, RAMP, JUNO, HQ-SAW, HQ-SQR, NOISE
Impact	Analog Oscillator Impact	0.0–4.0
Time Trip Sw	Time Trip Switch	OFF, ON
Beat Keep	Time Trip Beat Keep	OFF, ON
Waveform	PCM Oscillator Waveform	
Vari Sw	PCM Oscillator Vari Switch	OFF, ON
Start Offset	PCM Oscillator Start Offset	0–**
Playback Mode	PCM Oscillator Playback Mode	RETRIGGER, LEGATO, STEP, EVENT
Loop	PCM Oscillator Loop Switch	OFF, ON
Robot Voice	PCM Oscillator Robot Voice Switch	OFF, ON
Tempo Sync	PCM Oscillator Tempo Sync Switch	OFF, ON
Pitch		
Pitch	Oscillator Pitch	-63 – +63
Pitch KF	Oscillator Pitch Key Follow	-200– +200
Coarse	Oscillator Coarse Tune	-48– +48
Fine	Oscillator Fine Tune	-50– +50
Random	Oscillator Random Pitch Depth	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200
Pit LFO Dp	Oscillator Pitch LFO Depth	-63– +63
Velocity Curve	Envelope Velocity Curve	0–7
Velocity Sens	Envelope Velocity Sensitivity	-63– +63
Velocity A-Sens	Envelope Attack Time Velocity Sensitivity	-63– +63
Velocity D-Sens	Envelope Decay Time Velocity Sensitivity	-63– +63
Velocity R-Sens	Envelope Release Time Velocity Sensitivity	-63– +63
ADSR Attack	Envelope Attack Time	0–127, note (*)
ADSR Decay	Envelope Decay Time	0–127, note (*)
ADSR Sustain	Envelope Sustain Level	0–127
ADSR Release	Envelope Release Time	0–127, note (*)
Env Depth	Envelope Depth	-63– +63
Env Time KF	Envelope Time Key Follow	-200– +200
Pulse Width (ANALOG)		
Pulse Width		-63– +63
PW KF	Pulse Width Key Follow	-200– +200
PW LFO Depth	Pulse Width LFO Depth	-63– +63
Velocity Curve	Envelope Velocity Curve	0–7
Velocity Sens	Envelope Velocity Sensitivity	-63– +63
Velocity A-Sens	Envelope Attack Time Velocity Sensitivity	-63– +63
Velocity D-Sens	Envelope Decay Time Velocity Sensitivity	-63– +63
Velocity R-Sens	Envelope Release Time Velocity Sensitivity	-63– +63
ADSR Attack	Envelope Attack Time	0–127
ADSR Decay	Envelope Decay Time	0–127
ADSR Sustain	Envelope Sustain Level	0–127
ADSR Release	Envelope Release Time	0–127
Env Depth	Envelope Depth	-63– +63
Env Time KF	Envelope Time Key Follow	-200– +200

Parameter		Value
Fat (ANALOG)		
Fat		0–127
Fat KF	Fat Key Follow	-200– +200
Fat LFO Depth		-63– +63
Velocity Curve	Envelope Velocity Curve	0–7
Velocity Sens	Envelope Velocity Sensitivity	-63– +63
Velocity A-Sens	Envelope Attack Time Velocity Sensitivity	-63– +63
Velocity D-Sens	Envelope Decay Time Velocity Sensitivity	-63– +63
Velocity R-Sens	Envelope Release Time Velocity Sensitivity	-63– +63
ADSR Attack	Envelope Attack Time	0–127, note (*)
ADSR Decay	Envelope Decay Time	0–127, note (*)
ADSR Sustain	Envelope Sustain Level	0–127
ADSR Release	Envelope Release Time	0–127, note (*)
Env Depth	Envelope Depth	-63– +63
Env Time KF	Envelope Time Key Follow	-200– +200
Time (PCM)		
Time		-63– +63
Time KF	Time Key Follow	-200– +200
Time Offset		BWD, ZERO, FWD
Time LFO Depth		-63– +63
Velocity Curve	Envelope Velocity Curve	0–7
Velocity Sens	Envelope Velocity Sensitivity	-63– +63
Velocity A-Sens	Envelope Attack Time Velocity Sensitivity	-63– +63
Velocity D-Sens	Envelope Decay Time Velocity Sensitivity	-63– +63
Velocity R-Sens	Envelope Release Time Velocity Sensitivity	-63– +63
ADSR Attack	Envelope Attack Time	0–127, note (*)
ADSR Decay	Envelope Decay Time	0–127, note (*)
ADSR Sustain	Envelope Sustain Level	0–127
ADSR Release	Envelope Release Time	0–127, note (*)
Env Depth	Envelope Depth	-63– +63
Env Time KF	Envelope Time Key Follow	-200– +200
Formant (PCM)		
Formant		-63– +63
Formant KF	Formant Key Follow	-200– +200
Energy		0–127
Fmt LFO Depth	Formant LFO Depth	-63– +63
Velocity Curve	Envelope Velocity Curve	0–7
Velocity Sens	Envelope Velocity Sensitivity	-63– +63
Velocity A-Sens	Envelope Attack Time Velocity Sensitivity	-63– +63
Velocity D-Sens	Envelope Decay Time Velocity Sensitivity	-63– +63
Velocity R-Sens	Envelope Release Time Velocity Sensitivity	-63– +63
ADSR Attack	Envelope Attack Time	0–127, note (*)
ADSR Decay	Envelope Decay Time	0–127, note (*)
ADSR Sustain	Envelope Sustain Level	0–127
ADSR Release	Envelope Release Time	0–127, note (*)
Env Depth	Envelope Depth	-63– +63
Env Time KF	Envelope Time Key Follow	-200– +200
OSC TVA		
Level		0–127
Level KF	Level Key Follow	-200– +200
Level LFO Dp	Level LFO Depth	-63– +63
Velocity Curve	Envelope Velocity Curve	0–7
Velocity Sens	Envelope Velocity Sensitivity	-63– +63
Velocity A-Sens	Envelope Attack Time Velocity Sensitivity	-63– +63
Velocity D-Sens	Envelope Decay Time Velocity Sensitivity	-63– +63
Velocity R-Sens	Envelope Release Time Velocity Sensitivity	-63– +63
ADSR Attack	Envelope Attack Time	0–127, note (*)
ADSR Decay	Envelope Decay Time	0–127, note (*)
ADSR Sustain	Envelope Sustain Level	0–127
ADSR Release	Envelope Release Time	0–127, note (*)
Env Time KF	Envelope Time Key Follow	-200– +200

Parameter		Value
LFO		
Waveform	LFO Waveform	SIN, TRI, SAW, SQR, RND, TRP, S&H, CHAOS
Offset	LFO Offset	-100, -50, 0, +50, +100
Key Sync	LFO Key Sync Switch	OFF, ON
Delay Time	LFO Delay Time	0–127
Rate	LFO Rate	0–127, note (*)
Fade Mode	LFO Fade Mode	ON <<, ON >>, OFF <<, OFF >>
Fade Time	LFO Fade Time	0–127

*

(Thirty-second note), (Sixteenth note), (Eighth-note triplet), (Dotted sixteenth note), (Eighth note), (Quarter-note triplet), (Dotted eighth note), (Quarter note), (Half-note triplet), (Dotted quarter note), (Half note), (Whole-note triplet), (Dotted half note), (Whole note), (Double-note triplet), (Dotted whole note), (Double note)

Mod Group (p. 46)

Parameter		Value
Modulator Switch		OFF, ON
Mod Type		
Modulator Type		MIX, RING, FM, ENV RING, OSC SYNC
Original Level	Modulator Original Level	0–127
Attack	Modulator Attack Time	0–127
Release	Modulator Release Time	0–127

COSM1/COSM2 Group (p. 46)

Parameter		Value
COSM Switch		OFF, ON
COSM Type		
COSM Type		THRU, OD/DS, W-SHAPE, AMP, SPEAKER, RESONATOR, SBF1/2, COMB, DUAL, TVF, DYN-TVF, COMP, LIMITER, F-SHIFT, LO-FI
LFO		
Waveform	LFO Waveform	SIN, TRI, SAW, SQR, RND, TRP, S&H, CHAOS
Offset	LFO Offset	-100, -50, 0, +50, +100
Key Sync	LFO Key Sync Switch	OFF, ON
Delay Time	LFO Delay Time	0–127
Rate	LFO Rate	0–127, note (*)
Fade Mode	LFO Fade Mode	ON <<, ON >>, OFF <<, OFF >>
Fade Time	LFO Fade Time	0–127

*

(Thirty-second note), (Sixteenth note), (Eighth-note triplet), (Dotted sixteenth note), (Eighth note), (Quarter-note triplet), (Dotted eighth note), (Quarter note), (Half-note triplet), (Dotted quarter note), (Half note), (Whole-note triplet), (Dotted half note), (Whole note), (Double-note triplet), (Dotted whole note), (Double note)

For details on the parameters of each COSM section, refer to **"COSM Parameters"** (p. 111).

TVA Group (p. 47)

Parameter		Value
TVA Switch		OFF, ON
TVA		
Level		0–127
Level KF	Level Key Follow	-200– +200
Lvl LFO Dp	Level LFO Depth	-63– +63
Pan		L64–0–63R
Pan KF	Pan Key Follow	-200– +200
Pan LFO Dp	Pan LFO Depth	-63– +63
Velocity Curve	Envelope Velocity Curve	0–7
Velocity Sens	Envelope Velocity Sensitivity	-63– +63
Velocity A-Sens	Envelope Attack Time Velocity Sensitivity	-63– +63
Velocity D-Sens	Envelope Decay Time Velocity Sensitivity	-63– +63
Velocity R-Sens	Envelope Release Time Velocity Sensitivity	-63– +63
ADSR Attack	Envelope Attack Time	0–127, note (*)
ADSR Decay	Envelope Decay Time	0–127, note (*)
ADSR Sustain	Envelope Sustain Level	0–127
ADSR Release	Envelope Release Time	0–127, note (*)
Env Time KF	Envelope Time Key Follow	-200– +200
LFO		
Waveform	LFO Waveform	SIN, TRI, SAW, SQR, RND, TRP, S&H, CHAOS
Offset	LFO Offset	-100, -50, 0, +50, +100
Key Sync	LFO Key Sync Switch	OFF, ON
Delay Time	LFO Delay Time	0–127
Rate	LFO Rate	0–127, note (*)
Fade Mode	LFO Fade Mode	ON <<, ON >>, OFF <<, OFF >>
Fade Time	LFO Fade Time	0–127

*

(Thirty-second note), (Sixteenth note), (Eighth-note triplet), (Dotted sixteenth note), (Eighth note), (Quarter-note triplet), (Dotted eighth note), (Quarter note), (Half-note triplet), (Dotted quarter note), (Half note), (Whole-note triplet), (Dotted half note), (Whole note), (Double-note triplet), (Dotted whole note), (Double note)

Effect Group (p. 50)

Parameter		Value
Routing		
MFX Send	MFX Send Level	0–127
CHO Send	Chorus Send Level	0–127
REV Send	Reverb Send Level	0–127
Output Assign		MULTI, MAIN, DIR
MFX	MFX On / Off Switch	OFF, ON
MFX Type		00 (Thru)–41
MFX Master Level		0–127
MFX To CHO	MFX Chorus Send Level	0–127
MFX To REV	MFX Reverb Send Level	0–127
CHO	Chorus On / Off Switch	OFF, ON
CHO Type		00 (Off)–08
CHO Master Level	Chorus Master Level	0–127
CHO To REV	Chorus Reverb Send Level	0–127
REV	Reverb On / Off Switch	OFF, ON
REV Type		00 (Off)–10
REV Master Level	Reverb Master Level	0–127
MFX		
MFX Type		00 (Thru)–41
CHO		
CHO Type	Chorus Type	00 (Off)–08
REV		
REV Type	Reverb Type	00 (Off)–10

☞

- For details on the parameters of each MFX section, refer to **"MFX Parameters"** (p. 116).
- For details on the parameters of each chorus section, refer to **"Chorus Parameters"** (p. 138).
- For details on the parameters of each reverb section, refer to **"Reverb Parameters"** (p. 138).

System Parameters

Common Group (p. 74)

Parameter		Value
Master		
Master Tune		415.3–466.2 Hz
Master Key Shift		-24– +24
Master Level		0–127
Patch Remain	Patch Remain Switch	OFF, ON
Powerup Mode		Last Set, Default
IO		
External Input Type		STEREO L R, MONORAL MIX, MONORAL L, MONORAL R
Mix / Parallel		MIX, PARALLEL
Output Gain		-12– +12 dB
Digital Output Freq	Digital Output Frequency	44.1, 48, 96 KHz
EQ		
4 Band EQ	4-Band Equalizer Switch	OFF, ON
LOW Freq	Low Frequency	50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000 Hz
LOW Gain		-15– +15 dB
MID 1 Q		0.5, 0.7, 1.0, 2.0, 4.0, 8.0
MID 1 Freq	Mid 1 Frequency	50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000, 10000, 12500, 16000, 20000 Hz
MID 1 Gain		-15– +15 dB
MID 2 Q		0.5, 0.7, 1.0, 2.0, 4.0, 8.0
MID 2 Freq	Mid 2 Frequency	50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000, 10000, 12500, 16000, 20000 Hz
MID 2 Gain		-15– +15 dB
HIGH Freq	High Frequency	2000, 4000, 5000, 6300, 8000, 10000, 12500, 16000, 20000 Hz
HIGH Gain		-15– +15 dB
TOTAL Gain		-15– +15 dB
MIDI/USB		
Device ID	Device ID Number	17–32
Clock Source		INTERNAL, EXTERNAL
Rx PC	Receive Program Change Switch	OFF, ON
Rx Bank	Receive Bank Select Switch	OFF, ON
Rx Sys-Ex	Receive System Exclusive Switch	OFF, ON
Tx Edit	Transmit Edit Data Switch	OFF, ON
Clock Out		OFF, ON
Part MIDI		
Part 1–16 Rx Sw	Part 1–16 Receive Switch	OFF, ON
Part 1–16 Rx Ch	Part 1–16 Receive Channel	1–16

Controller Group (p. 77)

Parameter		Value
Tx		
Patch Tx Ch	Patch Transmit Channel	1–16, RX CH, OFF
Tx PC	Transmit Program Change Switch	OFF, ON
Tx Bank	Transmit Bank Select Switch	OFF, ON
Tx Active Sens	Transmit Active Sensing Switch	OFF, ON
KBD		
KBD Sens	Keyboard Sensitivity	LIGHT, MEDIUM, HEAVY
KBD Velocity	Keyboard Velocity	REAL, 1–127
After Sens	Aftertouch Sensitivity	0–200
Local Sw	Local Switch	OFF, ON
Remote KBD Sw	Remote Keyboard Switch	OFF, ON
TT Pad/Knob		
X Assign-XY		OFF, CC01–31, CC33–95
Y Assign-XY		OFF, CC01–31, CC33–95
X Assign-TT	X Assign-Time Trip	OFF, CC01–31, CC33–95
Y Assign-TT	Y Assign-Time Trip	OFF, CC01–31, CC33–95
Knob 1, 2 Assign		OFF, CC01–31, CC33–95
Beam		
D Beam Sens L, R	D Beam Sensitivity L, R	0–200
D Beam 1–4 Assign L, R		OFF, CC01–31, CC33–95
Pedal		
Hold Polarity	Hold Pedal Polarity	STANDARD, REVERSE
Pedal 1, 2 Assign		OFF, CC01–31, CC33–95, BEND UP, BEND DOWN, AFTERTOUCH

V-LINK Group (p. 80)

Parameter		Value
Tx		
Channel	V-LINK MIDI Channel	1–16
Audio	V-LINK Audio Switch	OFF, ON
Output	V-LINK Keyboard Output Fade Switch	OFF, ON
Local Sw	V-LINK Patch Palette Local Switch	OFF, ON
TT Pad/Knob		
Local Sw	V-LINK Time Trip Pad Local Switch	OFF, ON
X Assign-XY	V-LINK X Assign-XY	OFF, PLAYBACK-SPEED, DISSOLVE-TIME, AUDIO-LEVEL, COLOR-CB, COLOR-CR, BRIGHTNESS, VFX1, VFX2, VFX3, VFX4, OUTPUT-FADE, T-BAR
Y Assign-XY	V-LINK X Assign-XY	OFF, PLAYBACK-SPEED, DISSOLVE-TIME, AUDIO-LEVEL, COLOR-CB, COLOR-CR, BRIGHTNESS, VFX1, VFX2, VFX3, VFX4, OUTPUT-FADE, T-BAR
Assign-TT	V-LINK Assign-Time Trip	OFF, TIME-TRIP
Local Sw	V-LINK Knob1, 2 Local Switch	OFF, ON
1, 2 Assign	V-LINK Knob1, 2 Assign	OFF, PLAYBACK-SPEED, DISSOLVE-TIME, AUDIO-LEVEL, COLOR-CB, COLOR-CR, BRIGHTNESS, VFX1, VFX2, VFX3, VFX4, OUTPUT-FADE, T-BAR
Beam		
Local Sw	V-LINK D Beam Local Switch	OFF, ON
1–4 Assign L, R	V-LINK D Beam1–4 Assign L, R	OFF, PLAYBACK-SPEED, DISSOLVE-TIME, AUDIO-LEVEL, COLOR-CB, COLOR-CR, BRIGHTNESS, VFX1, VFX2, VFX3, VFX4, OUTPUT-FADE, T-BAR
Lever		
Mod Local Sw	V-LINK Modulation Local Switch	OFF, ON
Mod Assign	V-LINK Modulation Assign	OFF, PLAYBACK-SPEED, DISSOLVE-TIME, AUDIO-LEVEL, COLOR-CB, COLOR-CR, BRIGHTNESS, VFX1, VFX2, VFX3, VFX4, OUTPUT-FADE, T-BAR
Bend Local Sw	V-LINK Pitch Bend Local Switch	OFF, ON
Bend Assign	V-LINK Pitch Bend Assign	OFF, PLAYBACK-SPEED, DISSOLVE-TIME, AUDIO-LEVEL, COLOR-CB, COLOR-CR, BRIGHTNESS, VFX1, VFX2, VFX3, VFX4, OUTPUT-FADE, T-BAR
After Local Sw	V-LINK Aftertouch Local Switch	OFF, ON
After Assign	V-LINK Aftertouch Assign	OFF, PLAYBACK-SPEED, DISSOLVE-TIME, AUDIO-LEVEL, COLOR-CB, COLOR-CR, BRIGHTNESS, VFX1, VFX2, VFX3, VFX4, OUTPUT-FADE, T-BAR

COSM List

COSM Parameters

COSM provides 15 types. This section explains the features of each COSM, and the functions of the parameters.

☞ Explanations for each COSM Type are given on the following pages.

Overdrive / Distortion	OD/DS	(p. 111)
Wave Shape	W-SHAPE	(p. 111)
Amp Simulator	AMP	(p. 112)
Speaker Simulator	SPEAKER	(p. 112)
Resonator	RESONATOR	(p. 112)
1st order SideBandFilter	SBF1	(p. 112)
2nd order SideBandFilter	SBF2	(p. 113)
Comb Filter	COMB	(p. 113)
Dual Filter	DUAL	(p. 113)
TVF	TVF	(p. 114)
Dynamic TVF	DYN-TVF	(p. 114)
Polyphonic Compressor	COMP	(p. 114)
Polyphonic Limiter	LIMITER	(p. 115)
Frequency Shifter	F-SHIFT	(p. 115)
Lo-Fi Processor	LO-FI	(p. 115)

MEMO

Parameters marked by "#1"–"#4" can be selected as a destination parameter for matrix control (Destination). These correspond as follows.

#1: Destination CSM1/2-PRM1
#2: Destination CSM1/2-PRM2
#3: Destination CSM1/2-LFO-PRM1
#4: Destination CSM1/2-LFO-PRM2

Overdrive / Distortion

Overdrive produces a natural-sounding distortion similar to that produced by a vacuum tube amplifier. Distortion produces a more intense distortion than the overdrive effect.

Parameter	Value	Description
COSM Type		
Drive Type	OD, DS	Selects whether to use overdrive (OD) or distortion (DS).
Output Level	0–127	Output Level
Drive		
Drive #1	0–127	Degree of distortion
Drive LFO Depth #3	-63– +63	Amount of LFO applied to distortion
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
Tone		
Tone #2	0–127	Tonal character
Tone KF	-200– +200	Key follow setting for tone
Tone LFO Depth #4	-63– +63	Amount of LFO applied to tone
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
LFO		
* *For details on LFO settings, refer to **"Making LFO Settings"** (p. 49).*		

Wave Shape

You can use a variety of waveforms to create and distort the sound.

Parameter	Value	Description
COSM Type		
Shape Type	1–6	Type of waveform
Output Level	0–127	Output Level
Drive		
Drive #1	0–127	Degree of distortion
Drive LFO Depth #3	-63– +63	Amount of LFO applied to distortion
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
Tone		
Tone #2	0–127	Tonal character
Tone KF	-200– +200	Key follow setting for tone
Tone LFO Depth #4	-63– +63	Amount of LFO applied to tone
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
LFO		
* *For details on LFO settings, refer to **"Making LFO Settings"** (p. 49).*		

Amp Simulator

Simulates an amp.

Parameter	Value	Description
COSM Type		
Amp Type	1–3	Type of guitar amp
Bass	0–127	Tone of the bass / mid / treble range
Middle		
Treble		
Output Level	0–127	Output Level
Gain		
Gain #1	0–127	Degree of distortion
Gain LFO Depth #3	-63– +63	Amount of LFO applied to distortion
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
LFO		
* *For details on LFO settings, refer to **"Making LFO Settings"** (p. 49).*		

Speaker Simulator

Simulates the speaker type.

Parameter	Value	Description
COSM Type		
Speaker Type	1–12	

Resonator

Simulates the resonance of a guitar body.

Parameter	Value	Description
COSM Type		
Filter Type	BANJO, AC.GTR, RE.GTR	Type of filter (guitar)
Size		
Size #1	0–127	Body size
Size KF	-200– +200	Key follow setting for guitar body
Size LFO Depth #3	-63– +63	Amount of LFO applied to guitar body
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
Balance		
Balance #2	0–127	Volume balance between the direct sound and the effect sound
Balance LFO Depth #4	-63– +63	Amount of LFO applied to the volume balance
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
LFO		
* *For details on LFO settings, refer to **"Making LFO Settings"** (p. 49).*		

1st order SideBandFilter

By boosting the fundamental and overtones, you can apply a pitch to unpitched input sounds such as a noise or a drum phrase.

Parameter	Value	Description
COSM Type		
HPF	0–127	Cutoff frequency of the high pass filter
LPF	0–127	Cutoff frequency of the low pass filter
LPF KF	-200– +200	Key follow setting for cutoff frequency of low-pass filter
Sub	-100– +100	Sub detune
Octave	-2, -1, 0	Octave setting
Width		
Width #1	0–127	Bandwidth
Width KF	-200– +200	Key follow setting for bandwidth
Dyn Env	-63– +63	Envelope depth for the input sound
Width LFO Depth #3	-63– +63	Amount of LFO applied to bandwidth
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
Detune		
Detune #2	0–127	Detune
Dyn Env	-63– +63	Envelope depth for the input sound
Detune LFO Depth #4	-63– +63	Amount of LFO applied to detune
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
LFO		
* *For details on LFO settings, refer to **"Making LFO Settings"** (p. 49).*		

2nd order SideBandFilter

By boosting the fundamental and overtones, you can apply a pitch to unpitched input sounds such as noise or a drum phrase. This lets you create a stronger effect than the first-order sideband filter.

Parameter	Value	Description
COSM Type		
Q	0–127	Frequency bandwidth
LPF	0–127	Cutoff frequency of the low pass filter
LPF KF	-200– +200	Key follow setting for cut-off frequency of low-pass filter
Octave	-2, -1, 0	Octave setting
Width		
Width #1	0–127	Bandwidth
Width KF	-200– +200	Key follow setting for bandwidth
Dyn Env	-63– +63	Envelope depth for the input sound
Width LFO Depth #3	-63– +63	Amount of LFO applied to bandwidth
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
Detune		
Detune #2	0–127	Detune
Dyn Env	-63– +63	Envelope depth for the input sound
Detune LFO Depth #4	-63– +63	Amount of LFO applied to detune
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
LFO		
* *For details on LFO settings, refer to **"Making LFO Settings"** (p. 49).*		

Comb Filter

A comb filter can be used to boost or cut the fundamental or overtones.

Parameter	Value	Description
COSM Type		
Octave	-2, -1, 0, +1, +2	Octave setting
Tone		
Tone #1	0–127	Tonal character
Tone LFO Depth #3	-63– +63	Amount of LFO applied to tone
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
Detune		
Detune #2	0–127	Detune
Detune LFO Depth #4	-63– +63	Amount of LFO applied to detune
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
LFO		
* *For details on LFO settings, refer to **"Making LFO Settings"** (p. 49).*		

Dual Filter

Two filters can be connected in series or parallel.

Parameter	Value	Description
COSM Type		
Filter Type	LPF / HPF, LPF->HPF, BPF / BPF	Type of filter
Filter1/2		
Freq #1 / #2	0–127	Cutoff frequency of the filter
Freq KF	-200– +200	Key follow setting for filter cutoff frequency
Reso	0–127	Resonance
Freq LFO Depth #3 / #4	-63– +63	Amount of LFO applied to filter cutoff frequency
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
LFO		
* *For details on LFO settings, refer to **"Making LFO Settings"** (p. 49).*		

TVF

Cuts off a specific frequency band to change a sounds brightness, thickness, and other qualities.

Parameter	Value	Description
COSM Type		
Filter Type	LPF, BPF, HPF, NOTCH, PEAK	Type of filter
db / Octave	-24dB / oct, -12dB / oct, -6dB / oct	Amount of attenuation per octave
Cutoff		
Freq #1	0–127	Cutoff frequency of the filter
Freq KF	-200– +200	Key follow setting for filter cutoff frequency
LFO Dp #3	-63– +63	Amount of LFO applied to filter cutoff frequency
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
Resonance		
Reso #2	0–127	Resonance
R LFO Depth #4	-63– +63	Amount of LFO applied to resonance
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
LFO		
* *For details on LFO settings, refer to **"Making LFO Settings"** (p. 49).*		

Dynamic TVF

Cuts off a specific frequency band to change a sounds brightness, thickness, and other qualities. A wah effect can be applied by using the volume of the input sound to vary the center frequency.

Parameter	Value	Description
COSM Type		
Filter Type	LPF, BPF, HPF, NOTCH, PEAK	Type of filter
db / Octave	-24dB / oct, -12dB / oct, -6dB / oct	Amount of attenuation per octave
Cutoff		
Freq #1	0–127	Cutoff frequency of the filter
Freq KF	-200– +200	Key follow setting for filter cutoff frequency
Dyn	-63– +63	Envelope depth for the input sound
LFO Dp #4	-63– +63	Amount of LFO applied to filter cutoff frequency
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
Resonance		
Reso #2	0–127	Resonance
Dyn Env	-63– +63	Envelope depth for the input sound
R LFO Dp #4	-63– +63	Amount of LFO applied to resonance
* *For details on envelope settings, refer to **"Making Envelope Settings"** (p. 48).*		
LFO		
* *For details on LFO settings, refer to **"Making LFO Settings"** (p. 49).*		

Polyphonic Compressor

Flattens out high levels and boosts low levels, smoothing out unevenness in volume.

Parameter	Value	Description
COSM Type		
Attack #1	0–127	Attack time
Sustain #2	0–127	Sustain level
Output Level	0–127	Output Level

Polyphonic Limiter

Compresses signals that exceed a specified volume level, preventing distortion from occurring.

Parameter	Value	Description
COSM Type		
Thres	0–127	Sets the volume level at which the compression begins.
Ratio	2:1, 4:1, 16:1, 100:1	Compression ratio
Attack #1	0–127	Attack time
Release #2	0–127	Release time
Output	0–127	Output Level

Frequency Shifter

By shifting the frequency relationship of the fundamental and overtones, a human voice can be given a “groaning” character.

Parameter	Value	Description
Effect		
Effect #1	0–127	Effect depth
Effect KF	-200– +200	Key follow setting for the effect volume
Effect LFO Depth #3	-63– +63	Amount of LFO applied to the effect volume
* *For details on envelope settings, refer to **“Making Envelope Settings”** (p. 48).*		
Balance		
Balance #2	0–127	Volume balance between the direct sound and the effect sound
Balance LFO Depth	-63– +63	Amount of LFO applied to the volume balance
* *For details on envelope settings, refer to **“Making Envelope Settings”** (p. 48).*		
LFO		
* *For details on LFO settings, refer to **“Making LFO Settings”** (p. 49).*		

Lo-Fi Processor

By changing the bit count and sample rate, this effect recreates the Lo-Fi (Low-Fidelity) sounds of the early digital samplers and similar machines. After the Lo-Fi processor, a filter to change the tone is arranged in series.

Parameter	Value	Description
COSM Type		
Bit Down	0–15	This setting is for reducing the bit count.
Sample Rate Down	Normal, 1/2, 1/4, 1/8, 1/16, 1/32	Sets the fraction of current sampling rates to be used for processing.
Filter		
Filter #1	0–127	Cutoff frequency of the filter
Filter KF	-200– +200	Key follow setting for filter cutoff frequency
Filter LFO Depth #3	-63– +63	Amount of LFO applied to filter cutoff frequency
* *For details on envelope settings, refer to **“Making Envelope Settings”** (p. 48).*		
Balance		
Balance #2	0–127	Volume balance between the direct sound and the effect sound
Balance LFO Depth	-63– +63	Amount of LFO applied to the volume balance
LFO		
* *For details on LFO settings, refer to **“Making LFO Settings”** (p. 49).*		

Effects List

MFX Parameters

MFX (Multi-Effects) provides 41 types of effect. This section explains the features of each MFX, and the functions of the parameters.

MEMO

Parameters marked by "#1"–"#3" can be selected as a destination parameter for matrix control (Destination MFX1–MFX3). These correspond as follows.

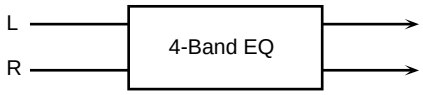
#1: Destination MFX1
#2: Destination MFX2
#3: Destination MFX3

☞ Explanations for each MFX Type are given on the following pages.

01: Parametric EQ	Para EQ	(p. 117)
02: Graphic EQ	Graph EQ	(p. 117)
03: Resonant Filter	ResoFilt	(p. 117)
04: Isolator and Filter	Isolator	(p. 118)
05: Distortion / OD	DS / OD	(p. 118)
06: Amp Simulator	Gtr Amp	(p. 119)
07: Auto Wah	Auto Wah	(p. 120)
08: Humanizer	Humanizer	(p. 120)
09: Dynamic Processor	Dynamic	(p. 121)
10: Tape Echo Simulator	TapeEcho	(p. 121)
11: Stereo Delay	St Delay	(p. 122)
12: Multi Tap Delay	TapDelay	(p. 123)
13: Reverse Delay	RvsDelay	(p. 123)
14: Vocal Echo	VocalEcho	(p. 124)
15: Band Pass Delay	BP Delay	(p. 124)
16: Analog Delay→Chorus	AD->Cho	(p. 125)
17: Digital Chorus	DigiCho	(p. 125)
18: Space Chorus	SpaceCho	(p. 126)
19: Hexa Chorus	Hex Cho	(p. 126)
20: Analog Flanger	Ana Flgr	(p. 126)
21: BOSS Flanger	BOSSFlgr	(p. 127)
22: Step Flanger	StepFlgr	(p. 127)
23: Analog Phaser	Ana Phsr	(p. 128)
24: Digital Phaser	DigiPhsr	(p. 128)
25: Rotary	Rotary	(p. 129)
26: Tremolo / Auto Pan	Trem / Pan	(p. 129)
27: Stereo Pitch Shifter	PitchSft	(p. 130)
28: OD / DS→Cho / Flg	OD->Cho	(p. 130)
29: OD / DS→Delay	OD->Dly	(p. 131)
30: Cho / Flg→Delay	Cho->Dly	(p. 131)
31: Enh→Cho / Flg	Enh->Cho	(p. 132)
32: Enh→Delay	Enh->Dly	(p. 132)
33: Vocal Multi	VocalMt	(p. 133)
34: Guitar Multi	GuitarMt	(p. 133)
35: Bass Multi	BASS Mt	(p. 134)
36: Rhodes Multi	RhodesMt	(p. 135)
37: Keyboard Multi	Kbd Mt	(p. 135)
38: Phonograph	Phonogrp	(p. 136)
39: Radio Tuning	Radio	(p. 136)
40: Bit Rate Converter	Bit Conv	(p. 137)
41: Pseudo Stereo	PseudoSt	(p. 137)

01: Parametric EQ (Parametric Equalizer)

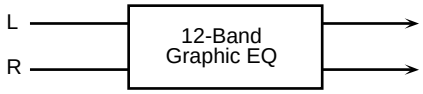
This is a 4 band (low range, midrange x 2, high range) stereo parametric equalizer.



Parameter	Value	Description
Low Freq	50–4000 Hz	Frequency of the low range
Low Gain	-15– +15 dB	Gain of the low range
Mid 1 Freq	50–20000 Hz	Frequency of the middle range 1
Mid 1 Q	0.5, 0.7, 1.0, 2.0, 4.0, 8.0	Width of the middle range 1 Set a higher value for Q to narrow the range to be affected.
Mid 1 Gain	-15– +15 dB	Gain of the middle range 1
Mid 2 Freq	50–20000 Hz	Frequency of the middle range 2
Mid 2 Q	0.5, 0.7, 1.0, 2.0, 4.0, 8.0	Width of the middle range 2 Set a higher value for Q to narrow the range to be affected.
Mid 2 Gain	-15– +15 dB	Gain of the middle range 2
Hi Freq	2000–20000 Hz	Frequency of the high range
Hi Gain	-15– +15 dB	Gain of the high range
Total Gain	-15– +15 dB	Output Level

02: Graphic EQ (Graphic Equalizer)

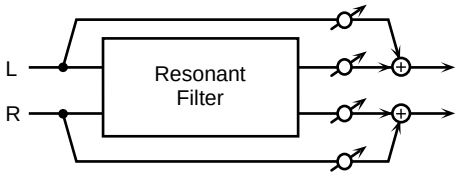
This simulates a 12-band stereo graphic equalizer.



Parameter	Value	Description
180Hz Gain	-15– +15 dB	Gain of each frequency band
250Hz Gain		
355Hz Gain		
500Hz Gain		
710Hz Gain		
1000Hz Gain		
1400Hz Gain		
2000Hz Gain		
2800Hz Gain		
4000Hz Gain		
5600Hz Gain		
8000Hz Gain		
Total Gain #1	-15– +15 dB	Output Level

03: Resonant Filter

It allows for cyclical control of the cutoff frequency using an LFO. It allows you to make drastic changes in the frequency response of the input signal by the cutoff frequency and feedback, making the sound brighter or darker, or giving it a distinctive character.



Parameter	Value	Description
Cutoff Freq	50–20000 Hz	Basic frequency of the filter The LFO will control the cutoff frequency with this value as its maximum level.
Resonance	0–127	Filter's resonance level Raising the setting increases resonance near the cutoff frequency, producing a uniquely characteristic sound.
Band Mode	LOW, MID, HIGH, LOW+MID, MID+HIGH, ALL	Frequency range to which the filter will be applied LOW: low frequency band MID: mid-range frequency HIGH: high frequency LOW+MID: low and middle range frequency MID+HIGH: middle and high range frequency ALL: all ranges
Sweep Waveform	TRI, SAWUP, SAWDN, SQR	LFO waveform TRI: Triangle wave SAWUP: Sawtooth Wave SAWDN: Sawtooth Wave SQR: Square wave
Sweep Rate	0.05–10.0 Hz, note	Frequency of the LFO modulation
Sweep Depth	0–127	Modulation depth of the LFO
Balance	DRY100:0WET–DRY0:100WET	Volume balance between the direct sound (DRY) and the effect sound (WET)

04: Isolator and Filter

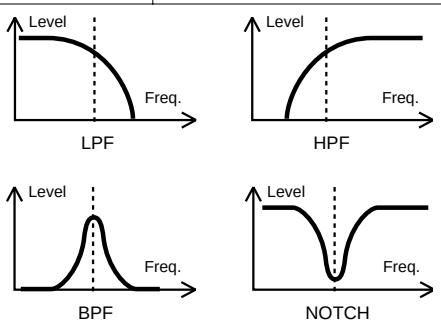
A 3-band isolator, filter, and low booster are connected in stereo in series.

Isolator is an equalizer which cuts the volume greatly, allowing you to add a special effect to the sound by cutting the volume in varying ranges.

The filters allow you to modify the frequency response of the input sound widely and give sound a character.

The low booster emphasizes the bottom to create a heavy bass sound.

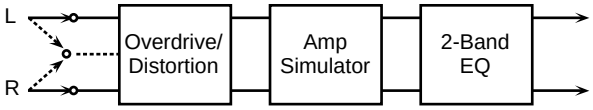
Parameter	Value	Description
Low Band Level #1	-60– +4 dB	These specify each level of the Low, Mid, and High frequency ranges. At -60 dB, the sound becomes inaudible. 0 dB is equivalent to the input level of the sound.
Mid Band Level #2		
Hi Band Level #3		
AP Low Sw	OFF, ON	Turns the Anti-Phase function on and off for the Low frequency ranges. When turned on, the counter-channel of stereo sound is inverted and added to the signal.
AP Low Level	0–127	Adjusts the level settings for the Low frequency ranges. Adjusting this level for certain frequencies allows you to lend emphasis to specific parts. (This is effective only for stereo source.)
AP Mid Sw	OFF, ON	Settings of the Anti-Phase function for the Middle frequency ranges The parameters are the same as for the Low frequency ranges.
AP Mid Level	0–127	
Filter Type	THRU, LPF, BPF, HPF, NOTCH	Type of filter THRU: no filter is used LPF: Passes frequencies below the Cutoff. BPF: Passes frequencies near the Cutoff. HPF: Passes frequencies above the Cutoff. NOTCH: Passes frequencies other than those near the Cutoff.



Parameter	Value	Description
Filter Slope	-12, -24 dB / O	Filter's attenuation slope -24 dB per octave: steep -12 dB per octave: gentle
Filter Cutoff	0–127	Cutoff frequency of the filter The closer to zero it is set, the lower the cutoff frequency becomes; set it closer to 127, and the cutoff frequency becomes higher.
Filter Resonance	0–127	Resonance level of the filter Raising the setting increases resonance near the cutoff frequency, giving the sound a special characteristic.
Filter Gain	0– +24 dB	Compensates for the volume dropped in the cut frequency range with some filters. The level of compensation increases as the value is increased, and raise the volume.
LowBoost Level	-15– +15 dB	Increasing this value gives you a heavier low end. * *Depending on the Isolator and filter settings this effect may be hard to distinguish.*

05: Distortion / OD (Distortion / Overdrive)

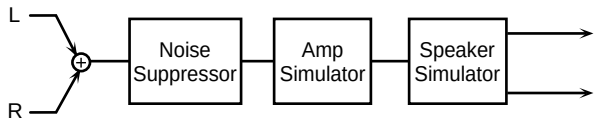
Overdrive produces a natural-sounding distortion similar to that produced by a vacuum tube amplifier. Distortion produces a more intense distortion than the overdrive effect.



Parameter	Value	Description
Input Mode	MONO, STEREO	Selects whether to input in stereo or in monaural. If MONO is selected, the left and right sound will be mixed, and input as monaural.
Distortion Mode	OD, DS	Selects whether to use overdrive (OD) or distortion (DS).
Drive #1	0–127	Degree of distortion
Amp Sim Sw	OFF, ON	Turns the Amp Simulator on / off.
Amp Type	SMALL, BUILT-IN, 2-STACK, 3-STACK	Type of guitar amp SMALL: small amp BUILT-IN: single-unit type amp 2-STACK: large double stack amp 3-STACK: large triple stack amp
Output Level	0–127	Output Level
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

06: Amp Simulator (Guitar Amp Simulator)

This is an effect that simulates an guitar amp.



Parameter	Value	Description
NS Sw	OFF, ON	Turns the noise suppressor on / off. The noise suppressor leaves the original sound unmodified, but mutes only the noise during the silent intervals.
NS Threshold	0–127	Adjusts the level at which the noise suppressor will begin to take effect. * *When the signal drops below the specified level, it will be muted.*
NS Release	0–127	Sets the transition time from when the noise suppression starts to the point where the volume reaches 0.
Amp Type	JC-120, CLEAN TWIN, MATCH DRIVE, BG LEAD, MS1959I, MS1959II, MS1959I+II, SLDN LEAD, METAL 5150, METAL LEAD, OD-1, OD-2 TURBO, DISTORTION, FUZZ	Type of guitar amp
	JC-120: The sound of a Roland JC-120. CLEAN TWIN: The sound of a standard built-in type vacuum tube amp. MATCH DRIVE: The sound of a recent vacuum tube amp widely used in blues, rock, and fusion. BG LEAD: The sound of a vacuum tube amp representative of the late 70's and the 80's. MS1959 I: The sound of the large vacuum tube amp stack that was indispensable to the British hard rock of the 70's, with input I connected. MS1959 II: The same amp as MS1959 I, but with input II connected. MS1959 I+II: The same amp as MS1959 I, but with inputs I and II connected in parallel. SLDN LEAD: The sound of a vacuum tube amp usable in a wide variety of styles. METAL 5150: The sound of a large vacuum tube amp suitable for heavy metal. METAL LEAD: A metal lead sound with a distinctive mid-range. OD-1: The sound of the BOSS OD-1 compact effects processor. OD-2 TURBO: The sound of the BOSS OD-2 compact effects processor with the Turbo switch on. DISTORTION: Distortion sound. FUZZ: Fuzz sound.	

Parameter	Value	Description
Volume	0–127	Volume and degree of distortion of the amp
Bass Middle Treble	0–127	Tone of the bass / mid / treble range * *Middle cannot be set if MATCH DRIVE is selected for the Amp Type.*
Presence	0–127	Tone for the ultra high frequency range
Master Volume	0–127	Volume of the entire amp
Brightness Sw	OFF, ON	Turning this On will produce a sharper and brighter sound. This parameter can be set if the Amp Type is set to JC-120, CLEAN TWIN, or BG LEAD.
Gain Sw	LOW, MID, HIGH	Degree of amp distortion
Sp Sim Sw	OFF, ON	Turns the Speaker Simulator on / off.
Sp Type	(see below)	Type of speaker
Mic Setting	1–10	Adjusts the location of the mic that is recording the sound of the speaker. Increasing this value will produce the effect of the mic being further away from the center of the speaker cone.
Mic Level	0–127	Volume of the microphone
Direct Level	0–127	Volume of the direct sound
Level	0–127	Output Level

Specifications of each Speaker Type

The speaker column indicates the diameter of each speaker unit (in inches) and the number of units.

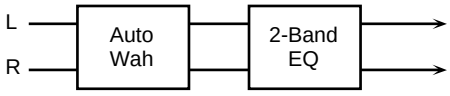
Type	Cabinet	Speaker	Microphone
SMALL	small open-back enclosure	10	dynamic
MIDDLE	open back enclosure	12 x 1	dynamic
JC-120	open back enclosure	12 x 2	dynamic
BUILT IN 1	open back enclosure	12 x 2	dynamic
BUILT IN 2	open back enclosure	12 x 2	condenser
BUILT IN 3	open back enclosure	12 x 2	condenser
BUILT IN 4	open back enclosure	12 x 2	condenser
BUILT IN 5	open back enclosure	12 x 2	condenser
BG STACK 1	sealed enclosure	12 x 2	condenser
BG STACK 2	large sealed enclosure	12 x 2	condenser
MS STACK 1	large sealed enclosure	12 x 4	condenser
MS STACK 2	large sealed enclosure	12 x 4	condenser
METAL STACK	large double stack	12 x 4	condenser

Recommended combination of pre-amp and speaker

Amp type	Speaker type
BG LEAD	BG STACK 1, BG STACK 2, MIDDLE
MS1959 II	BG STACK 1–2, METAL STACK
MS1959 I+II	BG STACK 1–2, METAL STACK
SLDN LEAD	BG STACK 1–2, METAL STACK
METAL 5150	BG STACK 1–2, METAL STACK
METAL LEAD	BG STACK 1–2, METAL STACK
OD-2 TURBO	BUILT IN 1–4
DISTORTION	BUILT IN 1–4
FUZZ	BUILT IN 1–4

07: Auto Wah

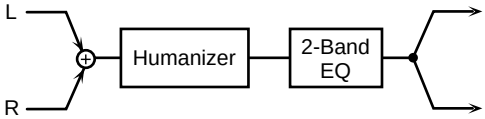
Wah is an effect that modifies the frequency characteristics of a filter over time, producing a unique tone. The wah effect can change in relation to the volume of the input signal, and / or cyclically.



Parameter	Value	Description
Filter Type	LPF, BPF	Type of filter LPF: The wah effect will be applied over a wide frequency range. BPF: The wah effect will be applied over a narrow frequency range
Polarity	DOWN, UP	When using the volume of the input signal to control the wah effect, this setting determines whether the frequency of the filter will be moved upward (UP) or downward (DOWN).
Frequency #1	0–127	Adjusts the frequency at which the wah effect will apply.
Peak	0–127	Adjusts the amount of the wah effect that will occur in the range of the center frequency. Set a higher value for Q to narrow the range to be affected.
Trigger Sens #2	0–127	Adjusts the sensitivity with which the wah effect is controlled.
Rate	0.05–10.0 Hz, note	Frequency of modulation
Depth	0–127	Depth of modulation
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

08: Humanizer

This adds a vowel character to the sound, making it similar to a human voice.



Parameter	Value	Description
Overdrive Sw	OFF, ON	Turns Drive on / off.
Drive	0–127	Degree of distortion
Vowel 1	a, e, i, o, u	First vowel
Vowel 2	a, e, i, o, u	Second vowel
Rate #1	0.05–10.0 Hz, note	Frequency at which the two vowels will be switched
Depth	0–127	Effect depth With a setting of 0, it will be fixed at Vowel 1.
Trigger Sens #2	-60–0 dB, LFO	Level at which the two vowels will be switched -60–0 dB: When the specified level is exceeded, the sound will change to the other vowel at the frequency (speed) specified by Rate. LFO: The two vowel sounds will alternate at the frequency specified by Rate, regardless of the level.
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

09: Dynamic Processor (Stereo Dynamic Processor)

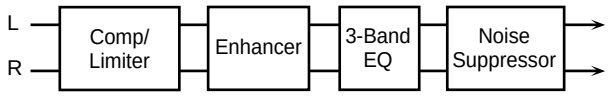
A comp / limiter, enhancer, 3-band equalizer, and noise suppressor are connected in series.

Comp / Limiter is able to use as a compressor, which controls inconsistencies in sound levels by suppressing high sound levels while lifting weaker signals, or as a limiter that prevents the signal from reaching exceedingly high levels.

Enhancer regulates the high-end overtones, clarifying the sound and the sound contour.

3-Band Equalizer works in three frequency ranges: Low, Mid, and High. You can set the frequencies and boost or cut the level.

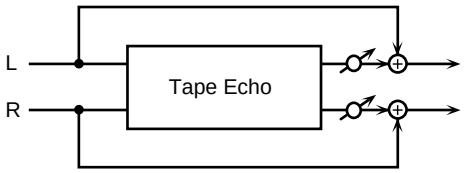
Noise Suppressor leaves the original sound unmodified, but mutes only the noise during the silent intervals.



Parameter	Value	Description
Comp Sw	OFF, ON	Turns the comp / limiter on / off.
Comp Threshold #1	-60–0 dB	Sets the volume level at which the compression begins.
Comp Attack	0–127	Sets the time after the sound volume is crossed the compressor threshold until compression begins.
Comp Release	0–127	Specifies the time from when the volume drops below the compressor threshold until compression is no longer applied.
Comp Ratio	1.5:1, 2:1, 4:1, 100:1	Sets the "source sound:output sound" compression ratio.
Comp Gain	-60– +12 dB	Output gain
Enhan Sw	OFF, ON	Turns the enhancer on / off.
Enhan Sens	0–127	Sensitivity of the enhancer
Enhan Frequency	0–127	Sets the lower limit of the frequencies to which the enhancement effect is added.
Enhan Mix Level	0–127	Level of the overtones generated by the enhancer
Enhan Level	0–127	Volume of the enhancer sound
EQ Low Freq	50–4000 Hz	Frequency of the low range
EQ Low Gain	-15– +15 dB	Gain of the low range
EQ Mid Freq	50–20000 Hz	Frequency of the middle range
EQ Mid Q	0.5, 0.7, 1.0, 2.0, 4.0, 8.0	Gain of the middle range Set a higher value for Q to narrow the range to be affected.
EQ Mid Gain	-15– +15 dB	Gain of the middle range
EQ Hi Freq	2000–20000 Hz	Frequency of the high range
EQ Hi Gain	-15– +15 dB	Gain of the high range
NS Sw	OFF, ON	Turns the noise suppressor on / off.
NS Threshold #2	0–127	Adjusts the level at which the noise suppressor will begin to take effect. * *When the signal drops below the specified level, it will be muted.*
NS Release	0–127	Sets the transition time from when the noise suppression starts to the point where the volume reaches 0.

10: Tape Echo Simulator

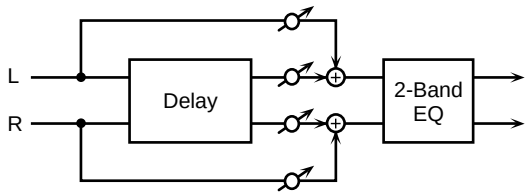
This virtual tape echo gives you real tape delay sound. This simulates the tape echo part of Roland's RE-201 Space Echo.



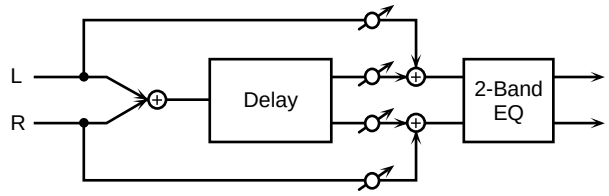
Parameter	Value	Description
Mode	S, M, L, S+M, S+L, M+L, S+M+L	Sets the combination of playback heads to be used. The RE-201 had three playback heads to make different delay times (Short, Medium, and Long delay) at once. For example, to use the short and middle heads, select S+M.
Repeat Rate #1	0–127	Sets the tape speed. This corresponds to the delay time in a contemporary delay effect.
Intensity #2	0–127	Sets the repeat times of the delayed sound. This is analogous to a contemporary delay's feedback setting.
Bass Treble	-100– +100	These are the echo sound's bass and treble adjustments. When set to 0, they make no change to the sound.
Head S Pan Head M Pan Head L Pan	L63–63R	These are the pan (left-right) settings for each of the heads for Short, Medium, and Long delay time. * *This parameter does not appear on the original RE-201.*
Tape Distortion	0–5	Adds the distortion characteristic of tape. The distortion gets more intense as the value is increased.
W / F Rate	0–127	Frequency of the wow and flutter modulation The wavering of multiple pitches that appears from tape wear and irregularities in rotation is called wow and flutter.
W / F Depth	0–127	Modulation depth of the wow and flutter
Echo Level	0–127	Volume of the echo sound.

11: Stereo Delay

This is a stereo delay. Depending on the length of the delay you set, you can get long echoes, thick sounds, or spatial sounds.



When Mode parameter is STEREO:

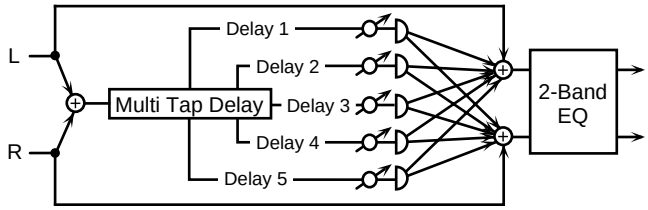


When Mode parameter is MONO or ALTERNATE:

Parameter	Value	Description
Mode	MONO, STEREO, ALTERNATE	Switches stereo, monaural, or alternate. MONO: This is a single-input, dual-output delay. Stereo sound (left and right) are mixed before being input. STEREO: This is a dual-input, dual-output delay. The delay sound output features the same stereo placement as that of the input. ALTERNATE: The left and right delay sound output alternately. (Alternate delay)
Delay Time	0–1300 ms (MONO), 0–650 ms (STEREO, ALTERNATE), note	Adjusts the delay time from the direct sound until the delay sound is heard.
L-R Shift	0–650 ms, note	Of the left and right delay sounds, the delay time will be increased for only one side. If the L-R order is L→R, the R sound will be later. In the case of R→L, the L sound will be later. * *When the mode is set to MONO or ALTERNATE, this setting will be ignored.*
L-R Order	L→R, R→L	In STEREO or ALTERNATE mode, this setting determines which of the left or right sides has the delay sound before the other L→R: The left side is expressed first R→L: The right side is expressed first * *In MONO mode, this setting will be ignored.*
Feedback	-98– +98 %	Adjusts the proportion of the delay sound that is fed back into the effect. Negative (-) settings will invert the phase.
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the delay sound quicker than other bands, which makes for a clearer delay effect.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first, makes the delay sound more natural.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Balance	DRY100:0WET–DRY0:100WET	Volume balance between the direct sound (DRY) and the delay sound (WET)
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

12: Multi Tap Delay

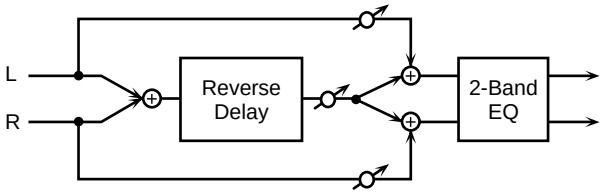
The effect has five delays. Each of the Delay Time parameters can be specified as a note length of the selected tempo. You can also set the panning and level of each delay sound.



Parameter	Value	Description
Delay 1–5	0–1300 ms, note	Specifies the delay time from the original sound until each delay sound (Delay 1/2/3/4/5) is heard.
Fbk Dly Time	0–1300 ms, note	Adjusts the delay time for the feedback sound
Feedback #1	-98– +98 %	Adjusts the proportion of the delay sound that is fed back into the effect. Negative (-) settings will invert the phase.
Delay 1–5 Level	0–127	Adjusts the volume of each delay sound (Delay 1/2/3/4/5)
Delay 1–5 Pan	L63–63R	Adjusts the pan of each delay sound (Delay 1/2/3/4/5)
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the delay sound quicker than other bands, which makes for a clearer delay effect.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first, makes the delay sound more natural.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

13: Reverse Delay

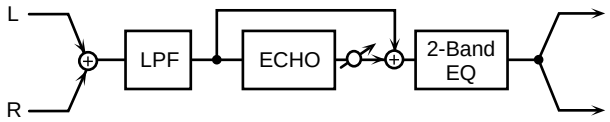
Adds the reverse of the input sound as the delay sound.



Parameter	Value	Description
Threshold	0–127	pecify the input level at which the delay will begin to apply.
Rvs Dly Time	0–650 ms, note	Specifies the delay time from the original sound until the delay sound is heard.
Rvs Feedback	-98– +98 %	Adjusts the proportion of the reverse delay sound that is fed back into the effect. Negative (-) settings will invert the phase.
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the delay sound quicker than other bands, which makes for a clearer delay effect.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first, makes the delay sound more natural.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Balance	DRY100:0WET–DRY0:100WET	Volume balance between the direct sound (DRY) and the effect sound (WET)
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

14: Vocal Echo

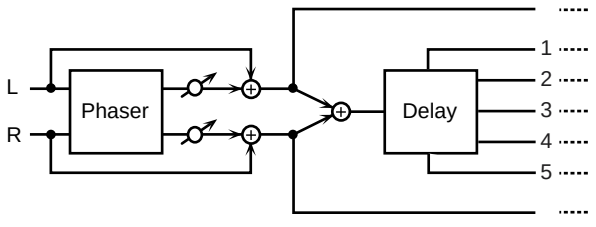
This effect simulates a karaoke echo.

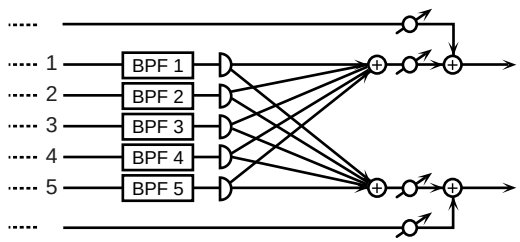


Parameter	Value	Description
Delay Time #1	0–650 ms, note	Adjusts the delay time from the direct sound until the delay sound is heard.
Pre LPF Freq	500–15000 Hz, THRU	Sets the filter's cutoff frequency (THRU: no filter is used)
Mod Rate	0.05–10.0 Hz, note	Specifies the modulation speed of the modulation effect.
Mod Depth	0–127	Specifies the modulation depth of the modulation effect.
Diffusion	0–100	Specifies the spaciousness of the delay sound.
Feedback #2	-98– +98 %	Adjusts the proportion of the delay sound that is fed back into the effect. Negative (-) settings will invert the phase.
Hi Damp Freq	500–15000 Hz, THRU	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first, makes the delay sound more natural.
Echo Level #3	0–127	Volume of the echo sound
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

15: Band Pass Delay

This is a delay with a band pass filter (a filter that outputs only a specified frequency range) on each of five delays. A phaser is included before the delay. Phaser is an effect that adds a phase-shifted sound to the original sound to create time-varying change, modulating the sound.





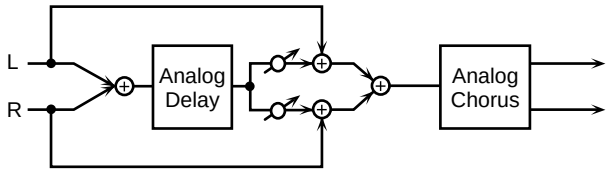
Parameter	Value	Description
Phaser Manual	0–127	Specifies the center frequency at which the sound is modulated.
Phaser Rate	0.05–10.0 Hz, note	Specifies the frequency of modulation.
Phaser Depth	0–127	Specifies the depth of modulation.
Phaser Resonance	0–127	Specifies the amount of feedback for the phaser. Higher settings will give the sound a stronger character.
Phaser Mix Level	0–127	Specifies the volume of the phase-shifted sound, relative to the direct sound.
Delay Time	0–1300 ms, note	Adjusts the delay time from the direct sound until the each delay sound is heard.
Fbk Dly Time	0–1300 ms, note	Adjusts the delay time for the feedback sound.
Dly Time Dev	0–1300 ms, note	Specifies the differences in delay time for each of the delay sounds.
Delay Level	0–127	Adjusts the volume of each delay sound.
Delay Feedback #1	-98– +98 %	Adjusts the proportion of the delay sound that is fed back into the effect. Negative (-) settings will invert the phase.
Delay Pan Type	1–10	Specifies the pan of each delay sound. Ten settings are provided as various panning combinations of the delay sounds (see below).
BPF 1–5 Freq	50–20000 Hz	Sets the center frequency for each band pass filter (1–5).
BPF 1/2 Q	0.3–24.0	Specify the output bandwidth for each band pass filter (1-5).
BPF 3/4/5 Q		
Balance #2	DRY100:0WET–DRY0:100WET	Volume balance between the direct sound (DRY) and the delay sound (WET)

Delay Pan Type

Values	Dly 1	Dly 2	Dly 3	Dly 4	Dly 5
1	L63	L32	0	32R	63R
2	L63	32R	L32	63R	0
3	L63	63R	L32	32R	0
4	32R	L32	L63	0	63R
5	63R	0	L63	L32	32R
6	L32	32R	L63	63R	0
7	0	63R	L63	32R	L32
8	0	63R	L32	32R	L63
9	0	32R	L32	63R	L63
10	63R	32R	0	L32	L63

16: Analog Delay→Chorus

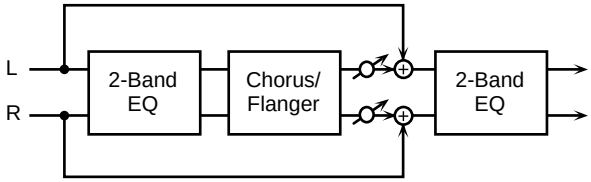
This effect reproduces the sound of the BOSS CE-1 Chorus Ensemble. To reproduce the sound of the unit at the time, a monaural analog-type delay is first inserted in series.



Parameter	Value	Description
Dly Sw	OFF, ON	Turns the delay on / off.
Dly Repeat Rate #1	0–127	Corresponds to the delay time in a delay effects.
Dly Intensity #2	0–127	Corresponds to the feedback setting in a delay effects.
Dly Level	0–127	Sets the volume of the delay sound.
Chorus Sw	OFF, ON	Turns chorus or vibrato on / off.
Chorus Mode	CHORUS, VIBRATO	Switches the sound between chorus and vibrato modes.
Chorus Intensity #3	0–127	When Chorus Mode is CHORUS, this sets the pitch vibrato speed.
Vibrato Depth	0–127	When Chorus Mode is VIBRATO, this sets the pitch vibrato depth.
Vibrato Rate	0–127	When Chorus Mode is VIBRATO, this sets the pitch vibrato speed.
Chorus Out Mode	MONO, ST-1, ST-2	Switches the output format (mono / stereo). MONO: Output is monaural. ST-1: Chorus sound of the pitch vibration which phase is inverted between left and right is mixed with the source sound. This is a broader chorus, with a weaker feeling of placement. ST-2: The left output contains the source sound, and the right side has the wavering chorus sound.

17: Digital Chorus

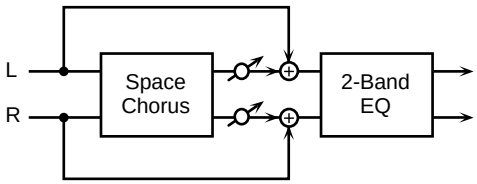
This is a stereo chorus or flanger. Equalizers are provided before (Pre) and after (Post) the chorus (or flanger).



Parameter	Value	Description
Mode	CHORUS, FLANGER	Selects either chorus or flanger.
Rate #1	0.05–10.0 Hz, note	Sets the cycle for the chorus or flanger sound undulations.
Depth	0–127	Adjusts the depth of modulation for the chorus or flanger.
Phase	0–180 deg	Specifies the spaciousness of the chorus or flanger sound.
Pre Low Freq	50–4000 Hz	Frequency of the low range (Pre)
Pre Low Gain	-15– +15 dB	Gain of the low range (Pre)
Pre Hi Freq	2000–20000 Hz	Frequency of the high range (Pre)
Pre Hi Gain	-15– +15 dB	Gain of the high range (Pre)
Pre Dly Time	0–50.0 ms	Adjusts the delay time from the direct sound until the chorus or flanger sound is heard.
Feedback	-98– +98 %	Adjusts the proportion of the chorus or flanger sound that is fed back into the effect. Negative (-) settings will invert the phase.
Xover LowFreq	50–4000 Hz	Attenuates the effect in the range below the specified frequency.
Xover Low Gain	-36–0 dB	Specifies how greatly the low range will be attenuated.
Xover HiFreq	2000–20000 Hz	Attenuates the effect in the range above the specified frequency.
Xover Hi Gain	-36–0 dB	Specifies how greatly the high range will be attenuated.
Modulation Level	0–127	Volume of the chorus or flanger sound.
Ps Low Freq	50–4000 Hz	Frequency of the low range (Post)
Ps Low Gain	-15– +15 dB	Gain of the low range (Post)
Ps Hi Freq	2000–20000 Hz	Frequency of the high range (Post)
Ps Hi Gain	-15– +15 dB	Gain of the high range (Post)

18: Space Chorus

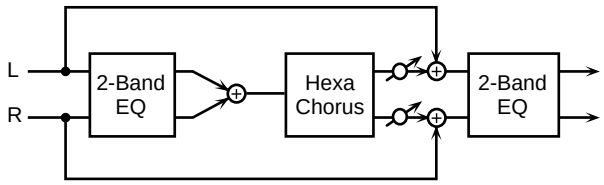
This effect reproduces the sound of Roland's SDD-320 spatial expression effects. Greater breadth is added.



Parameter	Value	Description
Mode	1, 2, 3, 4, 1+4, 2+4, 3+4	Selects the way in the chorus will change. The SDD-320 features four mode buttons for changing the effect. This setting determines which buttons are to be pressed. ("1+4" represents the condition when Buttons 1 and 4 are pressed simultaneously.)
Chorus Level #1	0–127	Volume level of the chorus sound
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

19: Hexa Chorus

Hexa-chorus is a six-stage chorus which adds depth and spaciousness to the sound. (Six chorus sounds with different delay times are overlaid.) An equalizer is provided before (Pre) and after (Post) the hexa chorus.



Parameter	Value	Description
Pre Dly Time	0–50.0 ms	Adjusts the delay time from the direct sound until the chorus sound is heard.
Pre Dly Dev	0–50.0 ms	Specifies the differences in Pre Delay time for each of the chorus sounds
Rate #1	0.05–10.0 Hz, note	Specifies the modulation frequency of the chorus sound.
Depth	0–127	Specifies the modulation depth of the chorus sound.
Depth Deviation	0–127	Specifies the difference in modulation depth between each of the chorus sounds.
Pan Deviation	L63–63R	Specifies the difference in stereo position between each of the chorus sounds. 0: All of the chorus sounds will be panned to the center. L20/R20: each chorus sound will be placed in 30 degree intervals relative to the center position.
Chorus Level #2	0–127	Volume level of the chorus sound
Pre Low Freq	50–4000 Hz	Frequency of the low range (Pre)
Pre Low Gain	-15– +15 dB	Gain of the low range (Pre)
Pre Hi Freq	2000–20000 Hz	Frequency of the high range (Pre)
Pre Hi Gain	-15– +15 dB	Gain of the high range (Pre)
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

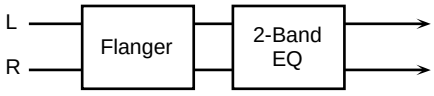
20: Analog Flanger

This effect reproduces the sound of Roland's SBF-325 analog flanger. You can get three different types of flanger sounds (adding a metallic swelling sound to the source sound) and chorus like effect.

Parameter	Value	Description
Mode	FL1, FL2, FL3, CHO	Sets the effect type. FL1: A general monaural flanger FL2: A stereo flanger that utilizes the stereo placement of the source sound FL3: A cross mix flanger that providing a more intense effect CHO: Chorus effect
Rate #1	0.02–5.00 Hz, note	Sets the rate of the swelling of the flanger sound.
Depth #2	0–127	Specifies the modulation depth of the flanger sound.
Manual	0–127	Adjusts the center frequency to which the flanger effect is applied.
Feedback #3	0–127	Sets the intensity of the flanger's effect. * *When the mode is set to CHO, this setting will be ignored.*
CH-R Mod Phase	NORM, INV	Sets the phase of the right channel. This is usually set to Normal (NORM). Setting this to Invert (INV) inverts the phase of the modulation (rise and fall) in the right channel.
CH-L Phase CH-R Phase	NORM, INV	Sets the phase of the left and right channels when the source sound is mixed with the flanging sound. NORM: Positive phase (+) INV: negative phase (-)

21: BOSS Flanger

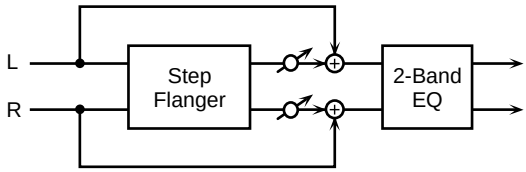
This effect features a pair of the same flanger circuits used in the BOSS compact flangers, connected in parallel for stereo input. This adds a particular metallic-sounding modulation to the source sound.



Parameter	Value	Description
Type	NORMAL, HI-BAND	Selects the model of flanger simulated. NORMAL: Normal type (BOSS BF-2) HI-BAND: High-Band type (BOSS HF-2). Setting HI-B raise the flanging sound one octave above that at the NORM.
Manual	0–127	Sets the center frequency for the effect.
Depth #1	0–127	Sets the depth of the swelling of the flanger sound.
Rate #2	0.05–10.0 Hz, note	Adjusts the modulation speed of the flanger effect.
Resonance	0–127	Sets the intensity of the flanger's effect. * *If the Feedback Mode is CROSS, this setting is ignored.*
Phase	0–180 deg	Specifies the spaciousness of the flanger sound.
Feedback Mode	NORMAL, CROSS	Specifies the input destination to which the flanger sound will be returned. NORMAL: The left flanger sound will be returned to the left input, and the right flanger sound to the right input. CROSS: The left flanger sound will be returned to the right input, and the right flanger sound to the left input.
Feedback	-98– +98 %	This setting makes the flanging sound of each of right and left channels return to the input of the opposite channel. Negative (-) settings will invert the phase. * *When the Feedback Mode is set to NORMAL, this setting will be ignored.*
Cross Mix Level	-100– +100	This setting makes the flanging sound from each of the right and left channels mix it with the flanging sound of the opposite channel. Negative (-) settings will invert the phase.
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

22: Step Flanger

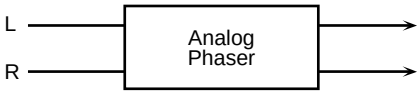
This is a flanger in which the flanger pitch changes in steps. The speed at which the pitch changes can also be specified in terms of a note-value of a specified tempo.

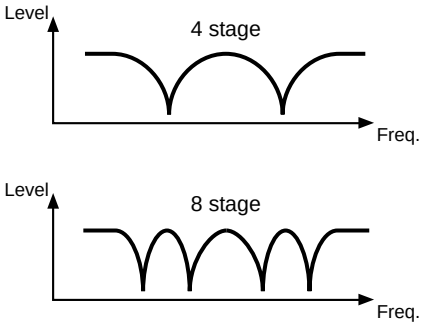


Parameter	Value	Description
Pre Dly Time	0–50.0 ms	Specifies the time delay from the original sound until the flanger sound is heard.
Rate #1	0.05–10.0 Hz, note	Specifies the modulation frequency of the flanger sound.
Depth	0–127	Specifies the modulation depth of the flanger sound.
Feedback	-98– +98 %	Adjusts the proportion of the flanger sound that is fed back into the effect. Negative (-) settings will invert the phase.
Phase	0–180 deg	Specifies the spaciousness of the flanger sound.
Step Rate #2	0.05–10.0 Hz, note	Specifies the frequency of pitch change.
Flanger Level	0–127	Volume of the flanger sound
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

23: Analog Phaser

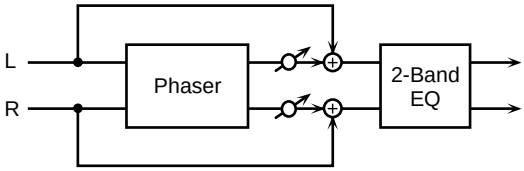
This effect features two analog-type phasers arranged in parallel, making it stereo compatible. The sound as it cyclically drifts in and out of phase is added to the source sound, creating the modulation with the characteristic of phasers.

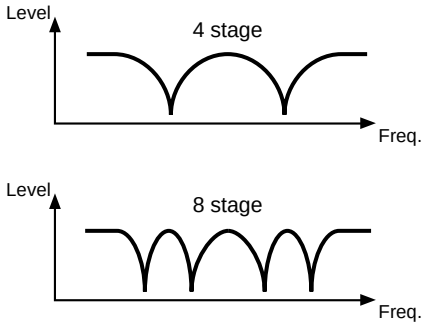


Parameter	Value	Description
Shift Mode	4STAGE, 8STAGE	Sets the number of stages in the phase shift circuit (four (4STAG) or eight (8STAGE)). Setting this to eight stages (8STAGE) increases the number of the frequency points that sound is canceled, giving a sharper effect.
		
Center Freq #1	0–127	Sets the center frequency to which the phaser effect is applied. Increasing this value moves the effect point of the phaser into higher frequency ranges.
Resonance	0–127	Amount of feedback Increasing this value gives a more distinctive sound to the effect.
LFO 1/2 Rate	0.02–5.00 Hz, note	Sets the rate of the swelling sound.
LFO 1/2 Depth	0–127	Specifies the depth of modulation.
LFO 1/2 Phase	NORM, INV	Sets the phase of both left and right swelling. NORM: The left and right phase will be the same. INV: The left and right phase will be opposite.

24: Digital Phaser

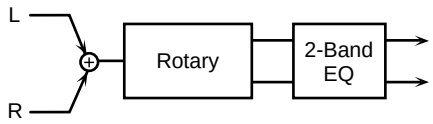
Phaser is an effect that adds a phase-shifted sound to the original sound to create time-varying change, modulating the sound.



Parameter	Value	Description
Shift Mode	4STAGE, 8STAGE	Sets the number of stages in the phase shift circuit (four (4STAG) or eight (8STAGE)). Setting this to eight stages (8STAGE) increases the number of the frequency points that sound is canceled, giving a sharper effect.
		
Manual	0–127	Specifies the center frequency at which the sound is modulated.
Rate #1	0.05–10.0 Hz, note	Specifies the frequency of modulation.
Depth #2	0–127	Specifies the depth of modulation.
Phase	NORM, INV	Sets the phase of both left and right swelling. NORM: The left and right phase will be the same. INV: The left and right phase will be opposite.
Resonance	0–127	Specifies the amount of feedback for the phaser. Higher settings will give the sound a stronger character.
Mix Level	0–127	Volume of the phase-shifted sound, relative to the direct sound
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

25: Rotary

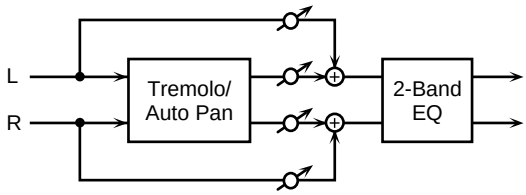
The Rotary effect simulates the sound of the rotary speakers often used with the electric organs of the past. Since the movement of the high range and low range rotors can be set independently, the unique type of modulation characteristic of these speakers can be simulated quite closely. This effect is most suitable for electric organ Patches.



Parameter	Value	Description
Speed	SLOW, FAST	Simultaneously switch the rotational speed of the low frequency rotor and high frequency rotor SLOW: Slows down the rotation to the Slow Rate. FAST: Speeds up the rotation to the Fast Rate.
Low Slow Rate	0.05–10.0 Hz, note	Slow speed (SLOW) of the low frequency rotor
Low Fast Rate	0.05–10.0 Hz, note	Fast speed (FAST) of the low frequency rotor
Low Acceleration	0–15	Adjusts the time it takes the low frequency rotor to reach the newly selected speed when switching from fast to slow (or slow to fast) speed.
Low Level	0–127	Volume of the low frequency rotor
Hi Slow Rate	0.05–10.0 Hz, note	Slow speed (SLOW) of the high frequency rotor
Hi Fast Rate	0.05–10.0 Hz, note	Fast speed (FAST) of the high frequency rotor
Hi Acceleration	0–15	Adjusts the time it takes the high frequency rotor to reach the newly selected speed when switching from fast to slow (or slow to fast) speed.
Hi Level	0–127	Volume of the high frequency rotor
Separation #1	0–127	Spatial dispersion of the sound
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

26: Tremolo/Auto Pan

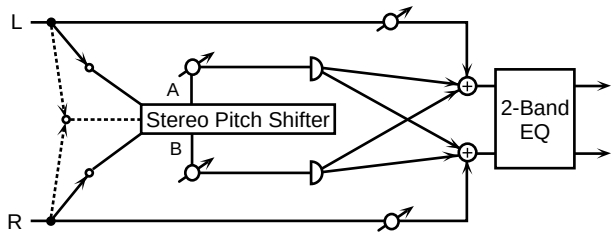
This is a stereo tremolo or auto-pan effect. Tremolo cyclically modulates the volume to add tremolo effect to the sound. The Auto Pan effect cyclically modulates the stereo location of the sound.



Parameter	Value	Description
Mode	TREMOLO, AUTO PAN	Selects whether to use tremolo or auto pan.
Waveform	TRI, SAWUP, SAWDN, SQR, SIN	Selects the type of modulation. TRI: Triangle wave SAWUP/SAWDN: Sawtooth Wave SQR: Square wave SIN: Sine wave
Rate #1	0.05–10.0 Hz, note	Frequency of modulation
Depth #2	0–127	Depth of modulation
Balance	DRY100:0WET–DRY0:100WET	Volume balance between the direct sound (DRY) and the effect sound (WET)
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

27: Stereo Pitch Shifter

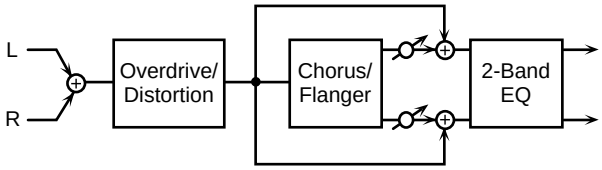
This effect features two pitch shifters arranged in parallel, making it stereo compatible. It can shift the pitch of the input signal up to one octave up or down.



Parameter	Value	Description
Input Mode	MONO, STEREO	Selects either stereo input or monaural input.
Grade	1–5	Sets the grade of the effect sound. The higher the value is set, the more natural-sounding can be obtained; however, this increases the delay from the source sound as well.
Coarse Pitch A / B #1 / #2	-12– +12 semitone	Specifies the pitch shift amount in semitones for pitch shift A or B.
Fine Pitch A / B	-100– +100 cent	Adjusts the pitch shift amount in 2-cent units (1 cent = 1 / 100 of a semitone) for pitch shift A or B.
Pre Delay A / B	0–500 ms	Adjusts the delay time from the direct sound until the pitch shift A or B sound is heard.
Level A / B	0–127	Volume of the pitch shift A or B sound.
Pan A / B	L63–63R	Pan of the pitch shift A or B sound.
Direct Level	0–127	Volume of the direct sound.
Feedback #3	-98– +98 %	Adjusts the proportion of the pitch shift sound that is fed back into the effect. Negative (-) settings will invert the phase.
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the pitch shift sound quicker than other bands.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

28: OD/DS→Cho/Flg (Overdrive/Distortion→Chorus/Flanger)

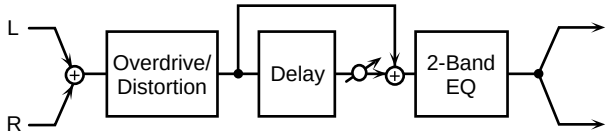
This effect connects either Overdrive or Distortion and either Chorus or Flanger.



Parameter	Value	Description
Distortion Mode	OD, DS	Selects whether to use overdrive (OD) or distortion (DS).
Drive #1	0–127	Degree of distortion
Amp Sim Sw	OFF, ON	Turns the amp simulator on / off.
Amp Type	SMALL, BUILT-IN, 2-STACK, 3-STACK	Type of guitar amp SMALL: small amp BUILT-IN: single-unit type amp 2-STACK: large double stack amp 3-STACK: large triple stack amp
Distortion Level	0–127	Volume of the overdrive or distortion sound.
Mod Mode	CHORUS, FLANGER	Selects whether to use chorus or flanger.
Mod Rate #2	0.05–10.0 Hz, note	Adjusts the speed of modulation for the chorus or flanger.
Mod Depth	0–127	Adjusts the depth of modulation for the chorus or flanger.
Mod Phase	0–180 deg	Sets how the chorus or flanger sound is spread.
Mod Pre Delay	0–50.0 ms	Adjusts the delay time from the direct sound until the chorus or flanger sound is heard.
Mod Feedback	-98– +98 %	Adjusts the proportion of the effect sound that is fed back into the effect. Negative (-) settings will invert the phase.
Xover LowFreq	50–4000 Hz	Attenuates the effect in the range below the specified frequency.
Xover Low Gain	-36–0 dB	Specifies how greatly the low range will be attenuated.
Xover HiFreq	2000–20000 Hz	Attenuates the effect in the range above the specified frequency.
Xover Hi Gain	-36–0 dB	Specifies how greatly the high range will be attenuated.
Mod Level	0–127	Volume of the chorus or flanger sound.
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

29: OD/DS→Delay (Overdrive/Distortion→Delay)

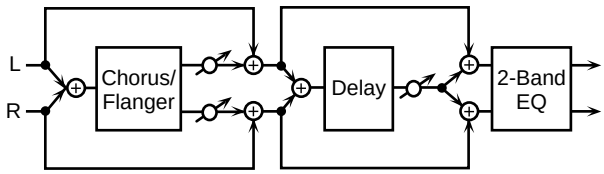
This effect connects either Overdrive or Distortion and Delay in series.



Parameter	Value	Description
Distortion Mode	OD, DS	Selects whether to use overdrive (OD) or distortion (DS).
Drive #1	0–127	Degree of distortion
Amp Sim Sw	OFF, ON	Turns the amp simulator on / off.
Amp Type	SMALL, BUILT-IN, 2-STACK, 3-STACK	Type of guitar amp SMALL: small amp BUILT-IN: single-unit type amp 2-STACK: large double stack amp 3-STACK: large triple stack amp
Distortion Level	0–127	Volume of the overdrive or distortion sound.
Delay Time	0–1300 ms, note	Adjusts the delay time from the direct sound until the delay sound is heard.
Delay Feedback #2	-98– +98 %	Adjusts the proportion of the delay sound that is fed back into the effect. Negative (-) settings will invert the phase.
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the delay sound quicker than other bands, which makes for a clearer delay effect.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first, makes the delay sound more natural.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Delay Level	0–127	Volume of the delay sound.
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

30: Cho/Flg→Delay (Chorus/Flanger→Delay)

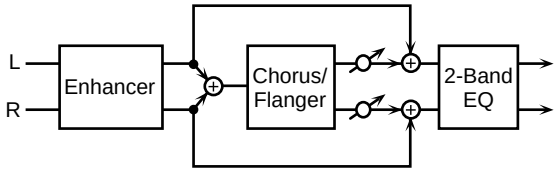
This effect connects either Chorus or Flanger and Delay in series.



Parameter	Value	Description
Mod Mode	CHORUS, FLANGER	Selects whether to use chorus or flanger.
Mod Rate #1	0.05–10.0 Hz, note	Adjusts the speed of modulation for the chorus or flanger.
Mod Depth	0–127	Adjusts the depth of modulation for the chorus or flanger.
Mod Phase	0–180 deg	Sets how the chorus or flanger sound is spread.
Mod Pre Delay	0–50.0 ms	Adjusts the delay time from the direct sound until the chorus or flanger sound is heard.
Mod Feedback	-98– +98 %	Adjusts the proportion of the effect sound that is fed back into the effect. Negative (-) settings will invert the phase.
Xover LowFreq	50–4000 Hz	Attenuates the effect in the range below the specified frequency.
Xover Low Gain	-36–0 dB	Specifies how greatly the low range will be attenuated.
Xover HiFreq	2000–20000 Hz	Attenuates the effect in the range above the specified frequency.
Xover Hi Gain	-36–0 dB	Specifies how greatly the high range will be attenuated.
Mod Level	0–127	Volume of the chorus or flanger sound.
Delay Time	0–1300 ms, note	Adjusts the delay time from the direct sound until the delay sound is heard.
Delay Feedback	-98– +98 %	Adjusts the proportion of the delay sound that is fed back into the effect. Negative (-) settings will invert the phase.
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the delay sound quicker than other bands, which makes for a clearer delay effect.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first, makes the delay sound more natural.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Delay Level	0–127	Volume of the delay sound.
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

31: Enh→Cho/Flg (Enhancer→Chorus/Flanger)

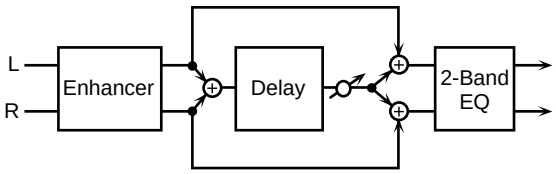
This effect connects Enhancer and either Chorus or Flanger in series.



Parameter	Value	Description
Enhan Sens #1	0–127	Sensitivity of the enhancer
Enhan Frequency	0–127	Sets the lower limit of the frequencies to which the enhancement effect is added.
Enhan Mix Level	0–127	Level of the overtones generated by the enhancer
Enhan Level	0–127	Volume of the enhancer sound
Mod Mode	CHORUS, FLANGER	Selects whether to use chorus or flanger.
Mod Rate #2	0.05–10.0 Hz, note	Adjusts the speed of modulation for the chorus or flanger.
Mod Depth	0–127	Adjusts the depth of modulation for the chorus or flanger.
Mod Phase	0–180 deg	Sets how the chorus or flanger sound is spread.
Mod Pre Delay	0–50.0 ms	Adjusts the delay time from the direct sound until the chorus or flanger sound is heard.
Mod Feedback	-98– +98 %	Adjusts the proportion of the effect sound that is fed back into the effect. Negative (-) settings will invert the phase.
Xover LowFreq	50–4000 Hz	Attenuates the effect in the range below the specified frequency.
Xover Low Gain	-36–0 dB	Specifies how greatly the low range will be attenuated.
Xover HiFreq	2000–20000 Hz	Attenuates the effect in the range above the specified frequency.
Xover Hi Gain	-36–0 dB	Specifies how greatly the high range will be attenuated.
Mod Level	0–127	Volume of the chorus or flanger sound.
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

32: Enh→Delay (Enhancer→Delay)

This effect connects an Enhancer and a Delay in series.



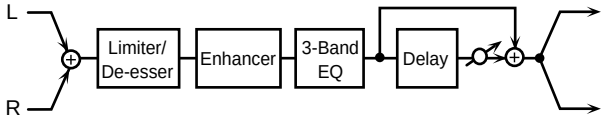
Parameter	Value	Description
Enhan Sens #1	0–127	Sensitivity of the enhancer
Enhan Frequency	0–127	Sets the lower limit of the frequencies to which the enhancement effect is added.
Enhan Mix Level	0–127	Level of the overtones generated by the enhancer
Enhan Level	0–127	Volume of the enhancer sound
Delay Time	0–1300 ms, note	Adjusts the delay time from the direct sound until the delay sound is heard.
Delay Feedback #2	-98– +98 %	Adjusts the proportion of the delay sound that is fed back into the effect. Negative (-) settings will invert the phase.
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the delay sound quicker than other bands, which makes for a clearer delay effect.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first, makes the delay sound more natural.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Delay Level	0–127	Volume of the delay sound.
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

33: Vocal Multi

A limiter / de-esser, enhancer, 3-band equalizer, and delay are connected in series.

A limiter holds down high signal levels to prevent distortion.

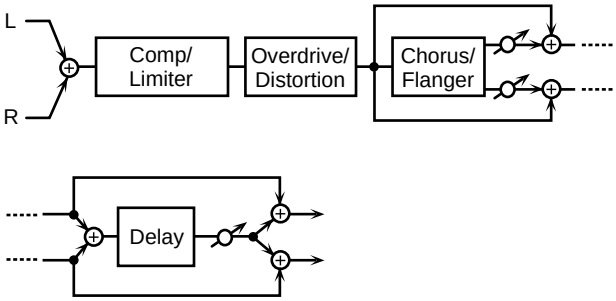
A de-esser cuts the sibilant sounds of a voice, producing a gentler tone.



Parameter	Value	Description
Limtr Mode	LIMITER, DE-ESSER	Selects whether the effect will function as a limiter or as a de-esser. * *When the limiter mode is DE-ESSER, the setting for Limtr xxxxx will be ignored. When the mode is LIMITER, the setting for DE xxxxx will be ignored.*
Limtr Threshold	-60–0 dB	Adjusts the level (Threshold Level) at which the limiter will begin to operate.
Limtr Release #1	0–127	Adjusts the time until when the limiter will turn off after the input level falls below the threshold level.
Limtr Gain	-60– +12 dB	Adjusts the gain of the sound that passes through the limiter.
DE Sens	0–127	Adjusts the sensitivity relative to the input volume, which controls how the effect is applied.
DE Frequency	1000–10000 Hz	Adjusts the frequency at which the de-esser effect will apply.
Enhan Sens	0–127	Sensitivity of the enhancer
Enhan Frequency	0–127	Sets the lower limit of the frequencies to which the enhancement effect is added.
Enhan Mix Level	0–127	Level of the overtones generated by the enhancer
Enhan Level	0–127	Volume of the enhancer sound
EQ Low Freq	50–4000 Hz	Frequency of the low range
EQ Low Gain	-15– +15 dB	Gain of the low range
EQ Mid Freq	50–20000 Hz	Frequency of the middle range
EQ Mid Q	0.5, 0.7, 1.0, 2.0, 4.0, 8.0	Gain of the middle range Set a higher value for Q to narrow the range to be affected.
EQ Mid Gain	-15– +15 dB	Gain of the middle range
EQ Hi Freq	2000–20000 Hz	Frequency of the high range
EQ Hi Gain	-15– +15 dB	Gain of the high range
Delay Time	0–1300 ms, note	Adjusts the delay time from the direct sound until the delay sound is heard.
Delay Feedback	-98– +98 %	Adjusts the proportion of the delay sound that is fed back into the effect. Negative (-) settings will invert the phase.
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the delay sound quicker than other bands, which makes for a clearer delay effect.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first, makes the delay sound more natural.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Delay Level	0–127	Volume of the delay sound.

34: Guitar Multi

Guitar Multi provides Comp / Limiter, Overdrive or Distortion, Chorus or Flanger, and Delay effects connected in series.

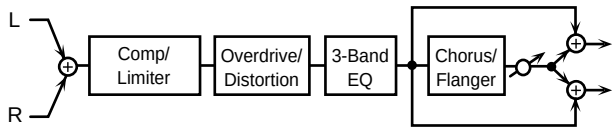


Parameter	Value	Description
Comp Sw	OFF, ON	Turns the comp / limiter on / off.
Comp Threshold	-60–0 dB	Sets the volume level at which the compression begins.
Comp Attack	0–127	Sets the time after the sound volume is crossed the compressor threshold until compression begins.
Comp Release	0–127	Specifies the time from when the volume drops below the compressor threshold until compression is no longer applied.
Comp Ratio	1.5:1, 2:1, 4:1, 100:1	Sets the “source sound:output sound” compression ratio.
Comp Gain	-60– +12 dB	Adjusts the output gain.
Distortion Sw	OFF, ON	Selects whether to use overdrive or distortion.
Distortion Mode	OD, DS	Selects whether to use overdrive (OD) or distortion (DS).
Drive	0–127	Degree of distortion
Amp Sim Sw	OFF, ON	Turns the amp simulator on / off.
Amp Type	SMALL, BUILT-IN, 2-STACK, 3-STACK	Type of guitar amp SMALL: small amp BUILT-IN: single-unit type amp 2-STACK: large double stack amp 3-STACK: large triple stack amp
Distortion Level	0–127	Volume of the overdrive or distortion sound.

Parameter	Value	Description
Mod Mode	CHORUS, FLANGER	Selects whether to use chorus or flanger.
Mod Rate	0.05–10.0 Hz, note	Adjusts the speed of modulation for the chorus or flanger.
Mod Depth	0–127	Adjusts the depth of modulation for the chorus or flanger.
Mod Phase	0–180 deg	Sets how the chorus or flanger sound is spread.
Mod Pre Delay	0–50.0 ms	Adjusts the delay time from the direct sound until the chorus or flanger sound is heard.
Mod Feedback	-98– +98 %	Adjusts the proportion of the effect sound that is fed back into the effect. Negative (-) settings will invert the phase.
Mod XoverLPF	500–15000 Hz, THRU	Adjusts the cutoff frequency of the low pass filter. (THRU: no filter is used)
Mod XoverHPF	THRU, 50–800 Hz	Adjusts the cutoff frequency of the high pass filter. (THRU: no filter is used)
Mod Level	0–127	Volume of the chorus or flanger sound.
Delay Time	0–1300 ms, note	Adjusts the delay time from the direct sound until the delay sound is heard.
Delay Feedback	-98– +98 %	Adjusts the proportion of the delay sound that is fed back into the effect. Negative (-) settings will invert the phase.
Hi Damp Freq	500–15000 Hz, THRU	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first, makes the delay sound more natural.
Delay Level	0–127	Volume of the delay sound.

35: Bass Multi

Bass Multi provides Comp / Limiter, Overdrive or Distortion, 3-band equalizer, and Chorus or Flanger effects connected in series. This algorithm is a multi-effects for bass.

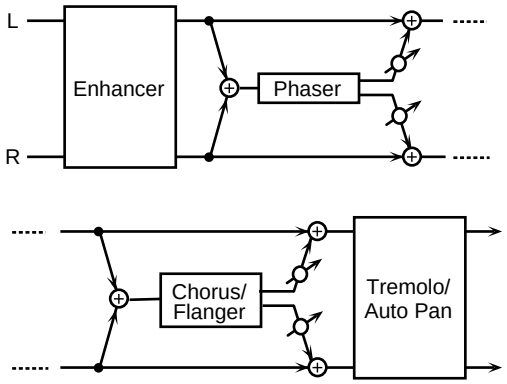


Parameter	Value	Description
Comp Sw	OFF, ON	Turns the comp / limiter on / off.
Comp Threshold #1	-60–0 dB	Sets the volume level at which the compression begins.
Comp Attack	0–127	Sets the time after the sound volume is crossed the compressor threshold until compression begins.
Comp Release	0–127	Specifies the time from when the volume drops below the compressor threshold until compression is no longer applied.
Comp Ratio	1.5:1, 2:1, 4:1, 100:1	Sets the “source sound:output sound” compression ratio.
Comp Gain	-60– +12 dB	Adjusts the output gain.

Parameter	Value	Description
Distortion Sw	OFF, ON	Selects whether to use overdrive or distortion.
Distortion Mode	OD, DS	Selects whether to use overdrive (OD) or distortion (DS).
Drive	0–127	Degree of distortion
Amp Sim Sw	OFF, ON	Turns the amp simulator on / off.
Amp Type	SMALL, BUILT-IN, 2-STACK, 3-STACK	Type of guitar amp SMALL: small amp BUILT-IN: single-unit type amp 2-STACK: large double stack amp 3-STACK: large triple stack amp
Distortion Level	0–127	Volume of the overdrive or distortion sound.
EQ Low Freq	50–4000 Hz	Frequency of the low range
EQ Low Gain	-15– +15 dB	Gain of the low range
EQ Mid Freq	50–20000 Hz	Frequency of the middle range
EQ Mid Q	0.5, 0.7, 1.0, 2.0, 4.0, 8.0	Gain of the middle range Set a higher value for Q to narrow the range to be affected.
EQ Mid Gain	-15– +15 dB	Gain of the middle range
EQ Hi Freq	2000–20000 Hz	Frequency of the high range
EQ Hi Gain	-15– +15 dB	Gain of the high range
Mod Mode	CHORUS, FLANGER	Selects whether to use chorus or flanger.
Mod Rate	0.05–10.0 Hz, note	Adjusts the speed of modulation for the chorus or flanger.
Mod Depth	0–127	Adjusts the depth of modulation for the chorus or flanger.
Mod Phase	0–180 deg	Sets how the chorus or flanger sound is spread.
Mod Pre Delay	0–50.0 ms	Adjusts the delay time from the direct sound until the chorus or flanger sound is heard.
Mod Feedback	-98– +98 %	Adjusts the proportion of the effect sound that is fed back into the effect. Negative (-) settings will invert the phase.
Mod XoverLPF	500–15000 Hz, THRU	Adjusts the cutoff frequency of the low pass filter. (THRU: no filter is used)
Mod XoverHPF	THRU, 50–800 Hz	Adjusts the cutoff frequency of the high pass filter. (THRU: no filter is used)
Mod Level	0–127	Volume of the chorus or flanger sound.

36: Rhodes Multi

Enhancer, Phaser, Chorus or Flanger, and Tremolo or Auto-pan are connected in series. This effect is used for electric piano.

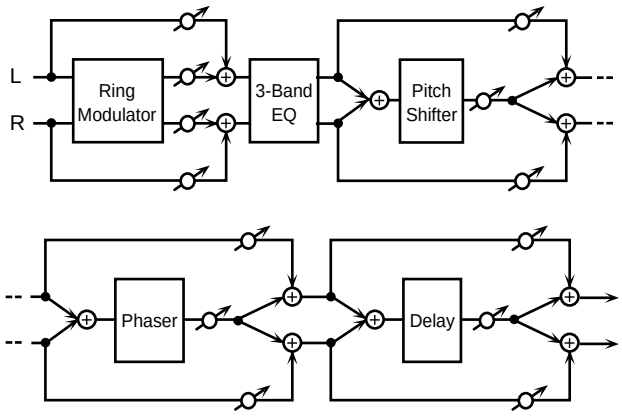


Parameter	Value	Description
Enhan Sw	OFF, ON	Turns the enhancer effect on / off.
Enhan Sens	0–127	Sensitivity of the enhancer
Enhan Frequency	0–127	Sets the lower limit of the frequencies to which the enhancement effect is added.
Enhan Mix Level	0–127	Level of the overtones generated by the enhancer
Enhan Level	0–127	Volume of the enhancer sound
Phaser Manual	0–127	Specifies the center frequency at which the sound is modulated.
Phaser Rate	0.05–10.0 Hz, note	Specifies the frequency of modulation.
Phaser Depth	0–127	Specifies the depth of modulation.
Phaser Resonance	0–127	Specifies the amount of feedback for the phaser. Higher settings will give the sound a stronger character.
Phaser Mix Level	0–127	Specifies the volume of the phase-shifted sound, relative to the direct sound.
Mod Mode	CHORUS, FLANGER	Selects whether to use chorus or flanger.
Mod Rate	0.05–10.0 Hz, note	Adjusts the speed of modulation for the chorus or flanger.
Mod Depth	0–127	Adjusts the depth of modulation for the chorus or flanger.
Mod Phase	0–180 deg	Sets how the chorus or flanger sound is spread.
Mod Pre Delay	0–50.0 ms	Adjusts the delay time from the direct sound until the chorus or flanger sound is heard.
Mod Feedback	-98– +98 %	Adjusts the proportion of the effect sound that is fed back into the effect. Negative (-) settings will invert the phase.
Mod XoverLPF	500–15000 Hz, THRU	Adjusts the cutoff frequency of the low pass filter. (THRU: no filter is used)
Mod XoverHPF	THRU, 50–800 Hz	Adjusts the cutoff frequency of the high pass filter. (THRU: no filter is used)
Mod Level	0–127	Volume of the chorus or flanger sound.
Trem / Pan Sw	OFF, ON	Turns the tremolo / auto pan effect on / off.
Trem Mode	TREMOLO, AUTO PAN	Selects whether to use tremolo or auto pan.
Trem Waveform	TRI, SAWUP, SAWDN, SQR, SIN	Selects the type of modulation. TRI: Triangle wave SAWUP / SAWDN: Sawtooth Wave SQR: Square wave SIN: Sine wave
	SAWUP SAWDN	
Trem Rate	0.05–10.0 Hz, note	Frequency of modulation
Trem Depth	0–127	Depth of modulation

37: Keyboard Multi

A ring modulator, 3-band equalizer, pitch shifter, phaser, and delay are connected in series.

Ring Modulator is an effect which applies ring modulation using an internal oscillator to the input signal, producing bell-like sounds.

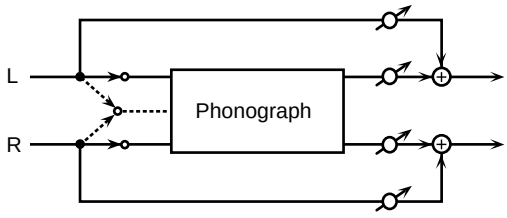


Parameter	Value	Description
Ring Freq	0–127	Frequency at which modulation will be applied
Ring Balance #1	DRY100:0WET–DRY0:100WET	Volume balance between the direct sound (DRY) and the ring modulated sound (WET)
EQ Low Freq	50–4000 Hz	Frequency of the low range
EQ Low Gain	-15– +15 dB	Gain of the low range
EQ Mid Freq	50–20000 Hz	Frequency of the middle range
EQ Mid Q	0.5, 0.7, 1.0, 2.0, 4.0, 8.0	Gain of the middle range Set a higher value for Q to narrow the range to be affected.
EQ Mid Gain	-15– +15 dB	Gain of the middle range
EQ Hi Freq	2000–20000 Hz	Frequency of the high range
EQ Hi Gain	-15– +15 dB	Gain of the high range
PS Grade	1–5	Sets the grade of the effect sound. The higher the value is set, the more natural-sounding can be obtained; however, this increases the delay from the source sound as well.

Parameter	Value	Description
PS Coarse	-12– +12 semitone	Specifies the pitch shift amount in semitone steps.
PS Fine	-100– +100 cent	Adjusts the pitch shift amount in 2-cent steps (1 cent = 1/100 of a semitone).
PS Balance	DRY100:0WET–DRY0:100WET	Volume balance between the direct sound (DRY) and the effect sound (WET)
Phaser Manual	0–127	Specifies the center frequency at which the sound is modulated.
Phaser Rate	0.05–10.0 Hz, note	Specifies the frequency of modulation.
Phaser Depth	0–127	Specifies the depth of modulation.
Phaser Resonance	0–127	Specifies the amount of feedback for the phaser. Higher settings will give the sound a stronger character.
Phaser Mix Level	0–127	Specifies the volume of the phase-shifted sound, relative to the direct sound.
Delay Time	0–650 ms, note	Adjusts the delay time from the direct sound until the delay sound is heard.
Delay Feedback	-98– +98 %	Adjusts the proportion of the delay sound that is fed back into the effect. Negative (-) settings will invert the phase.
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the delay sound quicker than other bands, which makes for a clearer delay effect.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first, makes the delay sound more natural.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Delay Level	0–127	Volume of the delay sound.

38: Phonograph

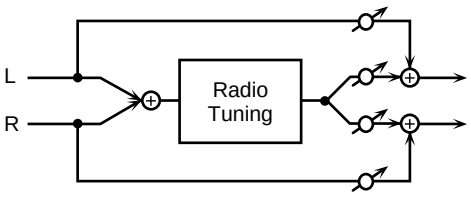
This effect reproduces the sound of an analog record played on a record player. This includes the various noises with the characteristic of records and the uneven rotation of older turntables.



Parameter	Value	Description
Input Mode	MONO, STEREO	Use this setting to select either a stereo or monaural record player for the effect.
Signal Dist	0–127	Degree of distortion
Frequency Range	0–127	Sets the frequency response of the record player. Lowering the value degrades the frequency characteristics, making the sound resemble that from an older system.
Disk Type	LP, EP, SP	Sets the turntable rotation speed. LP: 33 1/3 r.p.m. EP: 45 r.p.m. SP: 78 r.p.m.
Total Noise #1	0–127	Total noise level.
Scratch	0–127	Scratches on the record.
Dust	0–127	Dust on the record.
Hiss	0–127	Continuous hissing noise.
* *These settings add the typical record's noise. The noises increase as the values are raised. Set each of the Scratch, Dust, and Hiss noise levels to get a balance, the adjust the overall amount of noise with the Total Noise Level control.*		
Total Wow / Flutter #2	0–127	Total wow and flutter.
Wow	0–127	Wow, long cycle rotational irregularity.
Flutter	0–127	Flutter, short cycle rotational irregularity.
Random	0–127	Random rotational irregularity.
These settings determine the rotational irregularities of the record player. Set each of the Wow, Flutter, and Random levels to get a balance, the adjust the overall depth of the effect with the Total Wow / Flutter control.		
Balance	DRY100:0WET–DRY0:100WET	Volume balance between the direct sound (DRY) and the effect sound (WET)

39: Radio Tuning

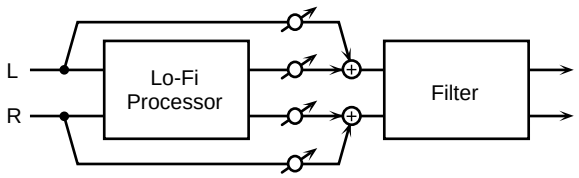
This effect reproduces the sound of an AM radio playing.

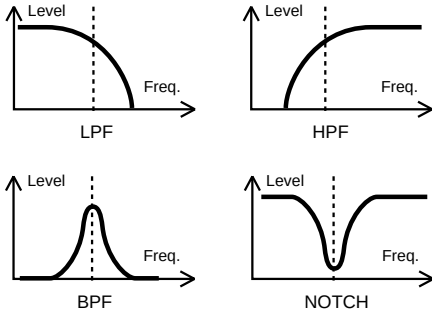


Parameter	Value	Description
Tuning #1	-50– +50	Adjusts the degree of noise that occurs when tuning a radio.
Noise Level #2	0–127	Sets the noise level.
Frequency Range #3	0–127	Sets the frequency response of the radio. Lowering the value worsens the frequency characteristics, making the sound appear to be coming from a tiny radio speaker.
Balance	DRY100:0WET–DRY0:100WET	Volume balance between the direct sound (DRY) and the effect sound (WET)

40: Bit Rate Converter

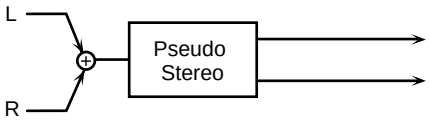
By changing the bit count and sample rate, this effect recreates the Lo-Fi (Low-Fidelity) sounds of the early digital samplers and similar machines. After the Lo-Fi processor, a filter to change the tone is arranged in series.



Parameter	Value	Description
Pre Filter Sw	OFF, ON	This is the switch of the filter placed before the Lo-Fi processing
Sample Rate	1/1, 1/2, 1/4, 1/8, 1/16, 1/32	Sets the fraction of current sampling rates to be used for processing.
Bit Down	0–15	This setting is for reducing the bit count.
Post Filter Sw	OFF, ON	This is the switch of the filter placed after the Lo-Fi processing.
Balance	DRY100:0WET–DRY0:100WET	Volume balance between the direct sound (DRY) and the effect sound (WET)
Filter Type	THRU, LPF, BPF, HPF, NOTCH	Type of filter THRU: no filter is used LPF: Passes frequencies below the Cutoff. BPF: Passes frequencies near the Cutoff. HPF: Passes frequencies above the Cutoff. NOTCH: Passes frequencies other than those near the Cutoff.
		
Filter Slope	-12, -24 dB/O	Filter's attenuation slope -24 dB per octave: steep -12 dB per octave: gentle
Filter Cutoff	0–127	Cutoff frequency of the filter The closer to zero it is set, the lower the cutoff frequency becomes; set it closer to 127, and the cutoff frequency becomes higher.
Filter Resonance	0–127	Resonance level of the filter Raising the setting increases resonance near the cutoff frequency, giving the sound a special characteristic.
Filter Gain	0– +24 dB	Compensates for the volume dropped in the cut frequency range with some filters. The level of compensation increases as the value is increased, and raise the volume.

41: Pseudo Stereo

Spreads the components of the monaural input sound to left and right, creating an artificial sense of stereo output.



Parameter	Value	Description
Depth #1	0–15	Spaciousness of the sound field

Chorus Parameters

The functions of Chorus parameters are explained.

Chorus Type

01: Chorus 1

This conventional chorus effect adds spaciousness and depth to the sound. Slow modulation frequency with less depth.

02:Chorus 2

This conventional chorus effect adds spaciousness and depth to the sound. Rapid modulation frequency with less depth.

03: Chorus 3

This conventional chorus effect adds spaciousness and depth to the sound. Slow modulation frequency with more depth.

04: Chorus 4

This conventional chorus effect adds spaciousness and depth to the sound. Rapid modulation frequency with more depth.

05: Feedback Chorus

This chorus offers a flanger-like effect, creating a soft sound.

06: Flanger

This effect sounds somewhat like a jet airplane taking off and landing.

07: Short Delay

This is a delay with a short delay time.

08: Fbk Short Delay

This is a short delay with many repeats.

Chorus Parameters

Parameter	Value	Description
Pre Low Freq	500–15000 Hz, THRU	Frequency of the low range (THRU: no filter is used)
Pre Hi Freq	THRU, 50–800 Hz	Frequency of the high range (THRU: no filter is used)
Pre Dly Time	0–50.0 ms	Adjusts the delay time from the direct sound until the chorus sound is heard.
Co LPF Freq	500–15000 Hz, THRU	Adjusts the cutoff frequency of the low pass filter. (THRU: no filter is used) The effect will be applied to the frequency range below the cutoff frequency.
Co HPF Freq	THRU, 50–800 Hz	Adjusts the cutoff frequency of the high pass filter. (THRU: no filter is used) The effect will be applied to the frequency range above the cutoff frequency.
Rate	0.05–10.0 Hz, note	Sets the cycle for the chorus or flanger sound undulations.
Depth	0–127	Adjusts the depth of modulation for the chorus or flanger.
Feedback	-98– +98 %	Adjusts the proportion of the effect sound that is fed back into the effect. Negative (-) settings will invert the phase.
Cho / Flg Sw	CHORUS, FLANGER	Selects either chorus or flanger.

Reverb Parameters

The functions of Reverb parameters are explained.

Explanations for each Reverb Type are given on the following pages.

01: Room 1 (p. 139)
02: Room 2 (p. 139)
03: Room 3 (p. 140)
04: Hall 1 (p. 140)
05: Hall 2 (p. 141)
06: Hall 3 (p. 141)
07: Garage (p. 142)
08: Plate (p. 142)
09: Non-Linear (p. 143)
10: Delay (p. 143)

01: Room 1

Reverb which simulates the reverberation within a room. It is standard room reverb.

Parameter	Value	Description
Pre Low Freq	50–4000 Hz	Frequency of the low range
Pre Low Gain	-15– +15 dB	Gain of the low range
Pre Mid Freq	50–20000 Hz	Frequency of the middle range
Pre Mid Q	0.5, 0.7, 1.0, 2.0, 4.0, 8.0	Gain of the middle range Set a higher value for Q to narrow the range to be affected.
Pre Mid Gain	-15– +15 dB	Gain of the middle range
Pre Hi Freq	2000–20000 Hz	Frequency of the high range
Pre Hi Gain	-15– +15 dB	Gain of the high range
Low Rev Time	0.06–32.0 sec	Duration (time) of the reverb for the low frequency band
Hi Rev Time	0.06–32.0 sec	Duration (time) of the reverb for the high frequency band
Xover Freq	160–15000 Hz, THRU	The reverberation specified by the Low Rev Time will be applied to the range below this frequency, and by the Hi Rev Time to the range above this frequency.
Pre Dly Time	0–200.0 ms	Adjusts the delay time from the direct sound until the delay sound is heard.
Density	0–99	Density of the reverb
Room Size	5.6–32.6 m	Size of the room which is simulated
Early Ref Level	0–99	Volume level of the initial reflected sound
Release Density	0–99	Density of the sound that reaches the listener after many repeated reflections
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the reverb sound quicker than other bands.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Post HC Freq	160–15000 Hz, THRU	Frequency at which the high cut filter will begin to take effect (THRU: no filter is used)

02: Room 2

This simulates the reverberation of a room. It is suitable for simulating a fairly small room, and produces a clear reverberation.

Parameter	Value	Description
Pre Low Freq	50–4000 Hz	Frequency of the low range
Pre Low Gain	-15– +15 dB	Gain of the low range
Pre Mid Freq	50–20000 Hz	Frequency of the middle range
Pre Mid Q	0.5, 0.7, 1.0, 2.0, 4.0, 8.0	Gain of the middle range Set a higher value for Q to narrow the range to be affected.
Pre Mid Gain	-15– +15 dB	Gain of the middle range
Pre Hi Freq	2000–20000 Hz	Frequency of the high range
Pre Hi Gain	-15– +15 dB	Gain of the high range
Reverb Time	0.06–32.0 sec	Duration (time) of the reverb
Pre Dly Time	0–200.0 ms	Adjusts the delay time from the direct sound until the delay sound is heard.
Density	0–99	Density of the reverb
Room Size	1–10	Size of the room which is simulated
Early Ref Level	0–99	Volume level of the initial reflected sound
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the reverb sound quicker than other bands.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Post HC Freq	160–15000 Hz, THRU	Frequency at which the high cut filter will begin to take effect (THRU: no filter is used)

03: Room 3

Reverb which simulates the reverberation within a room. This is suitable for simulating a fairly large room, and produces reverberation with a strong mid and low range.

Parameter	Value	Description
Pre Low Freq	50–4000 Hz	Frequency of the low range
Pre Low Gain	-15– +15 dB	Gain of the low range
Pre Mid Freq	50–20000 Hz	Frequency of the middle range
Pre Mid Q	0.5, 0.7, 1.0, 2.0, 4.0, 8.0	Gain of the middle range Set a higher value for Q to narrow the range to be affected.
Pre Mid Gain	-15– +15 dB	Gain of the middle range
Pre Hi Freq	2000–20000 Hz	Frequency of the high range
Pre Hi Gain	-15– +15 dB	Gain of the high range
Reverb Time	0.06–32.0 sec	Duration (time) of the reverb
Pre Dly Time	0–200.0 ms	Adjusts the delay time from the direct sound until the delay sound is heard.
Density	0–99	Density of the reverb
Room Size	1–8	Size of the room which is simulated
Early Ref Level	0–99	Volume level of the initial reflected sound
Release Density	0–99	Density of the sound that reaches the listener after many repeated reflections
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the reverb sound quicker than other bands.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Post HC Freq	160–15000 Hz, THRU	Frequency at which the high cut filter will begin to take effect (THRU: no filter is used)

04: Hall 1

This simulates the reverberation of a concert hall. It is a conventional hall reverb. You can also apply a chorus effect to the reverberation to adjust the sense of spaciousness or to create a special effect.

Parameter	Value	Description
Pre Low Freq	50–4000 Hz	Frequency of the low range
Pre Low Gain	-15– +15 dB	Gain of the low range
Pre Mid Freq	50–20000 Hz	Frequency of the middle range
Pre Mid Q	0.5, 0.7, 1.0, 2.0, 4.0, 8.0	Gain of the middle range Set a higher value for Q to narrow the range to be affected.
Pre Mid Gain	-15– +15 dB	Gain of the middle range
Pre Hi Freq	2000–20000 Hz	Frequency of the high range
Pre Hi Gain	-15– +15 dB	Gain of the high range
Low Rev Time	0.06–64.0 sec	Duration (time) of the reverb for the low frequency band.
Hi Rev Time	0.06–64.0 sec	Duration (time) of the reverb for the high frequency band
Xover Freq	160–15000 Hz, THRU	The reverberation specified by the Low Rev Time will be applied to the range below this frequency, and by the Hi Rev Time to the range above this frequency.
Pre Dly Time	0–200.0 ms	Adjusts the delay time from the direct sound until the delay sound is heard.
Density	0–99	Density of the reverb
Room Size	5.6–32.6 m	Size of the room which is simulated
Early Ref Level	0–99	Volume level of the initial reflected sound
Release Density	0–99	Density of the sound that reaches the listener after many repeated reflections
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the reverb sound quicker than other bands.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Post HC Freq	160–15000 Hz, THRU	Frequency at which the high cut filter will begin to take effect (THRU: no filter is used)
Chorus Rate	0–127	Rate of modulation for the reverb
Chorus Depth	0–127	Depth of modulation for the reverb

05: Hall 2

Simulates the reverberation in a concert hall. This is suitable for simulating a smaller room, and produces a clear reverberation.

Parameter	Value	Description
Pre Low Freq	50–4000 Hz	Frequency of the low range
Pre Low Gain	-15– +15 dB	Gain of the low range
Pre Mid Freq	50–20000 Hz	Frequency of the middle range
Pre Mid Q	0.5, 0.7, 1.0, 2.0, 4.0, 8.0	Gain of the middle range Set a higher value for Q to narrow the range to be affected.
Pre Mid Gain	-15– +15 dB	Gain of the middle range
Pre Hi Freq	2000–20000 Hz	Frequency of the high range
Pre Hi Gain	-15– +15 dB	Gain of the high range
Reverb Time	0.06–64.0 sec	Duration (time) of the reverb
Pre Dly Time	0–200.0 ms	Adjusts the delay time from the direct sound until the delay sound is heard.
Density	0–99	Density of the reverb
Room Size	1–10	Size of the room which is simulated
Early Ref Level	0–99	Volume level of the initial reflected sound
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the reverb sound quicker than other bands.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Post HC Freq	160–15000 Hz, THRU	Frequency at which the high cut filter will begin to take effect (THRU: no filter is used)

06: Hall 3

Simulates the reverberation in a concert hall. This is suitable for simulating a fairly large room, and produces reverberation with a strong mid and low range.

Parameter	Value	Description
Pre Low Freq	50–4000 Hz	Frequency of the low range
Pre Low Gain	-15– +15 dB	Gain of the low range
Pre Mid Freq	50–20000 Hz	Frequency of the middle range
Pre Mid Q	0.5, 0.7, 1.0, 2.0, 4.0, 8.0	Gain of the middle range Set a higher value for Q to narrow the range to be affected.
Pre Mid Gain	-15– +15 dB	Gain of the middle range
Pre Hi Freq	2000–20000 Hz	Frequency of the high range
Pre Hi Gain	-15– +15 dB	Gain of the high range
Reverb Time	0.06–64.0 sec	Duration (time) of the reverb
Pre Dly Time	0–200.0 ms	Adjusts the delay time from the direct sound until the delay sound is heard.
Density	0–99	Density of the reverb
Room Size	1–8	Size of the room which is simulated
Early Ref Level	0–99	Volume level of the initial reflected sound
Release Density	0–99	Density of the sound that reaches the listener after many repeated reflections
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the reverb sound quicker than other bands.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Post HC Freq	160–15000 Hz, THRU	Frequency at which the high cut filter will begin to take effect (THRU: no filter is used)

07: Garage

This simulates the reverberation of a garage. It produces the reverberation of a room surrounded by hard-surfaced walls with many reflections.

Parameter	Value	Description
Pre Low Freq	50–4000 Hz	Frequency of the low range
Pre Low Gain	-15– +15 dB	Gain of the low range
Pre Mid Freq	50–20000 Hz	Frequency of the middle range
Pre Mid Q	0.5, 0.7, 1.0, 2.0, 4.0, 8.0	Gain of the middle range Set a higher value for Q to narrow the range to be affected.
Pre Mid Gain	-15– +15 dB	Gain of the middle range
Pre Hi Freq	2000–20000 Hz	Frequency of the high range
Pre Hi Gain	-15– +15 dB	Gain of the high range
Reverb Time	0.06–32.0 sec	Duration (time) of the reverb
Pre Dly Time	0–200.0 ms	Adjusts the delay time from the direct sound until the delay sound is heard.
Density	0–99	Density of the reverb
Room Size	1–8	Size of the room which is simulated
Early Ref Level	0–99	Volume level of the initial reflected sound
Release Density	0–99	Density of the sound that reaches the listener after many repeated reflections
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the reverb sound quicker than other bands.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Post HC Freq	160–15000 Hz, THRU	Frequency at which the high cut filter will begin to take effect (THRU: no filter is used)

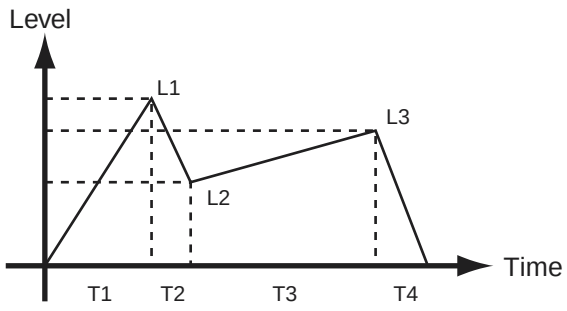
08: PLATE

Simulates plate reverberation (a reverb unit that uses the vibration of a metallic plate).

Parameter	Value	Description
Pre Low Freq	50–4000 Hz	Frequency of the low range
Pre Low Gain	-15– +15 dB	Gain of the low range
Pre Mid Freq	50–20000 Hz	Frequency of the middle range
Pre Mid Q	0.5, 0.7, 1.0, 2.0, 4.0, 8.0	Gain of the middle range Set a higher value for Q to narrow the range to be affected.
Pre Mid Gain	-15– +15 dB	Gain of the middle range
Pre Hi Freq	2000–20000 Hz	Frequency of the high range
Pre Hi Gain	-15– +15 dB	Gain of the high range
Low Rev Time	0.06–32.0 sec	Duration (time) of the reverb for the low frequency band.
Hi Rev Time	0.06–32.0 sec	Duration (time) of the reverb for the high frequency band
Xover Freq	160–15000 Hz, THRU	The reverberation specified by the Low Rev Time will be applied to the range below this frequency, and by the Hi Rev Time to the range above this frequency.
Pre Dly Time	0–200.0 ms	Adjusts the delay time from the direct sound until the delay sound is heard.
Density	0–99	Density of the reverb
Room Size	5.6–34.7 m	Size of the room which is simulated
Early Ref Level	0–99	Volume level of the initial reflected sound
Release Density	0–99	Density of the sound that reaches the listener after many repeated reflections
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the reverb sound quicker than other bands.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first.
Hi Damp Gain	-36–0 dB	Degree of High Damp
Post HC Freq	160–15000 Hz, THRU	Frequency at which the high cut filter will begin to take effect (THRU: no filter is used)

09: Non-Linear

This uses digital processing to create an artificial reverberation that is quite different than naturally occurring reverberation.

Parameter	Value	Description
Pre Low Freq	50–4000 Hz	Frequency of the low range
Pre Low Gain	-15– +15 dB	Gain of the low range
Pre Mid Freq	50–20000 Hz	Frequency of the middle range
Pre Mid Q	0.5, 0.7, 1.0, 2.0, 4.0, 8.0	Gain of the middle range Set a higher value for Q to narrow the range to be affected.
Pre Mid Gain	-15– +15 dB	Gain of the middle range
Pre Hi Freq	2000–20000 Hz	Frequency of the high range
Pre Hi Gain	-15– +15 dB	Gain of the high range
Pre Dly Time	0–200.0 ms	Adjusts the delay time from the direct sound until the delay sound is heard.
Density	0–99	Density of the reverb
Early Ref Level	0–99	Volume level of the initial reflected sound
NLR Type	L→R, NORMAL, L←R	Method of output panning L→R: Pan from the L channel to the R channel NORMAL: Output without panning L←R: Pan from the R channel to the L channel
Env Time Ratio	10–120 %	The overall time will be expanded or contracted while preserving the time ratios of the various envelope times.
Envelope T1–T4	0.1–1000 ms	Time until each point (T1–T4) is reached
Envelope L1–L3	0–100	Output level for each point (L1–L3) * *If the total length of Envelope times (T1+T2+T3+T4) exceeds 1000 ms, the sound of the portion that extends beyond this will be cut.*
		
Feedback Time	0.1–1000 ms	Delay time for the feedback sound
Feedback Level	0–99 %	Amount of feedback
Post HC Freq	160–15000 Hz, THRU	Frequency at which the high cut filter will begin to take effect (THRU: no filter is used)

10: Delay

This is a stereo delay. Depending on the length of the delay you set, you can get long echoes, thick sounds, or spatial sounds.

Parameter	Value	Description
Mode	MONO, STEREO, ALTERNATE	Switches stereo, monaural, or alternate. MONO: This is a single-input, dual-output delay. Stereo sound (left and right) are mixed before being input. STEREO: This is a dual-input, dual-output delay. The delay sound output features the same stereo placement as that of the input. ALTERNATE: The left and right delay sound output alternately. (Alternate delay)
Delay Time	0–1300 ms (MONO), 0–650 ms (STEREO, ALTERNATE), note	Adjusts the delay time from the direct sound until the delay sound is heard.
L-R Shift	0–650 ms, note	Of the left and right delay sounds, the delay time will be increased for only one side. If the L-R order is L→R, the R sound will be later. In the case of R→L, the L sound will be later. * *When the mode is set to MONO or ALTERNATE, this setting will be ignored.*
L-R Order	L→R, R→L	In STEREO or ALTERNATE mode, this setting determines which of the left or right sides has the delay sound before the other L→R: The left side is expressed first R→L: The right side is expressed first * *In MONO mode, this setting will be ignored.*
Feedback	-98– +98 %	Adjusts the proportion of the delay sound that is fed back into the effect. Negative (-) settings will invert the phase.
Low Damp Freq	50–4000 Hz	Adjusts the frequency below which sound fed back to the effect will be cut. The Low Damp function damps the low frequency band of the delay sound quicker than other bands, which makes for a clearer delay effect.
Low Damp Gain	-36–0 dB	Degree of Low Damp
Hi Damp Freq	2000–20000 Hz	Adjusts the frequency above which sound fed back to the effect will be cut. High Damp, by attenuating the higher frequencies first, makes the delay sound more natural.
Hi Damp Gain	-36–0 dB	Degree of High Damp

Parameter	Value	Description
Balance	DRY100:0WET–DRY0:100WET	Volume balance between the direct sound (DRY) and the delay sound (WET)
Ps Low Freq	50–4000 Hz	Frequency of the low range
Ps Low Gain	-15– +15 dB	Gain of the low range
Ps Hi Freq	2000–20000 Hz	Frequency of the high range
Ps Hi Gain	-15– +15 dB	Gain of the high range

Troubleshooting

If the this unit does not function in the way you expect, first check the following points. If this does not resolve the problem, consult your dealer or a nearby Roland Service Station.

* *If a message appears during operation, consult the following section* ***"Message List"*** *(p. 149).*

Problems Related to the V-Synth

Problem	Cause	Action
Power does not turn on	Is the AC cord connected correctly to the V-Synth and to an AC outlet?	Check the AC cord connections.
No Sound/Volume is low	Is the power of the connected devices turned on?	Make sure that the power of your amp or mixer system is turned on.
	Is the volume turned down?	Check the volume of the V-Synth and of the connected amp or mixer.
	Is there sound in the headphones?	If there is sound in the headphones, it is possible that the connection cables are broken, or that the amp or mixer is malfunctioning. Check the connection cables and your other equipment once again.
	Is the Demo Song playback selected?	Press [EXIT] to exit Demo Song playback mode (Quick Start; p. 8).
	Is the Local Switch turned OFF?	Turn the Local Switch ON (p. 78).
	Is the Patch level set too low?	Check the Level parameter setting (p. 47).
	Are the Effect settings correct?	Check the Effect settings ON or OFF, in the Effect Balance or Level (p. 50).
	Are the settings for the output destination correct?	Check the output assign settings (p. 50).
	Have volume messages been received from an external MIDI device to lower the volume?	Check the volume.
	Could the oscillator be off?	Press [OSC1] or [OSC2] to turn on the oscillator.
	Could the V-Synth be set to USB communication in Storage mode?	Cancel USB communication (p. 92, p. 94).
The volume level of the instrument connected to INPUT Jacks is too low.	Could you be using a connection cable that contains a resistor?	Use a connection cable that does not contain a resistor.
Pitch is wrong	Are the Pitch settings of the Oscillator section correct?	Check the Coarse Tune / Fine Tune parameter settings (p. 41).
	Is the Master Tune setting correct?	Check the Master Tune parameter setting (p. 74).
	Has a Pitch Bend message been received from an external device, leaving the pitch "hanging?"	Try moving the pitch bend lever of the connected MIDI keyboard.
When you play the keyboard, notes do not stop	Is the pedal polarity of the Hold Pedal reversed?	Check the Hold Polarity parameter setting (p. 79).
Sound is distorted	Is an effect which distorts the sound being applied?	Check the effect settings (p. 116).
	Has the Patch level been turned up?	Check the Level parameter setting (p. 47).
Effects do not apply	[MFX], [CHO], or [REV] effect switches may have been turned off.	Turn them on.
	Are the various effect settings correct?	If the send level of each effect is set to 0, the effect will not be applied. Check the settings (p. 50).
		Even with send levels to each effect set at 0, effects are not applied if the MFX Master Level, the Chorus Master Level, or the Reverb Master Level is set to 0. Check each setting (p. 50).
		If Output Assign is set to other than "MULTI," the MFX sound will not be output (p. 50).
Oscillator Type has been to "EXT IN," but no sound is heard when audio is input through the INPUT jacks	If the oscillator is set to external input (EXT IN), you will not hear sound unless you play the keyboard.	Try playing the keyboard.
No sound from connected MIDI device	Is the instrument set to transmit MIDI messages?	Check the Patch Tx Ch parameter setting (p. 77).
	Does the MIDI transmit channel for the V-Synth match the MIDI receive channel for the connected MIDI device?	Check the Patch Tx Ch parameter setting (p. 77).

Problem	Cause	Action
Exclusive messages are not received	Is the instrument set to receive Exclusive messages?	Set the Rx Sys-Ex parameter to ON (p. 76).
	Does the Device ID number of the transmitting device match the Device ID number of the V-Synth?	Check the Device ID parameter setting (p. 75).
Noise is heard while sampling	During sampling, the output frequency of the digital audio interface is fixed at 44.1 kHz, regardless of the System mode setting. Noise may be heard from connected devices at this time.	This is not a malfunction.
Can't edit or encode a wave	Could you have selected a preset wave?	The V-Synth's factory-loaded preset waves cannot be edited or encoded. Select a sample that you've sampled or imported.
Beep tone was turned off, but it continues to sound the next time power is turned on	The Power-up Mode is set to "Default."	Change it to "Last Set" and save the System settings (p. 74).

Problems Related to the USB Driver (Windows)

Problem	Cause	Action
When I start (or restart) my computer with the V-Synth connected via USB, it freezes at the startup screen and fails to work	It has been found that on some computers, starting (or restarting) the computer while the V-Synth is powered up and USB is connected will cause the computer to freeze at the startup screen and fail to work.	Switch off the V-Synth and then restart your computer.
When I turned off the power of the V-Synth, an error occurred in Windows	When using Windows Me, powering down the V-Synth without unmounting the drive may cause an error to occur in Windows.	You must cancel the USB connection (p. 92) before you turn off the power of the V-Synth.
When I attempt to exit Windows while leaving the V-Synth powered up, the computer does not turn off	On some Windows computers, it has been reported that the computer cannot be powered down if you exit Windows when the V-Synth is still powered up (without unmounting the drive). (The shutdown process halts before the computer's power is switched off.)	You must cancel the USB connection (p. 92) before you turn off the power of the V-Synth before you exit Windows.
When I connect the V-Synth via USB and wake up my computer from Suspend, it stops functioning	On some computers, waking up the computer from the Suspend state while a powered-up V-Synth is connected via USB will cause the computer to freeze.	Before you Suspend your computer, power down the V-Synth using the procedure described on p. 92.
V-Synth driver is not mounted in Windows XP	If a network drive is mounted in Windows XP, that drive number may conflict with the V-Synth drive, causing the V-Synth drive to not be recognized.	Change the assignment of the network drive.
"Find new hardware wizard" does not execute automatically **The "Insert Disk" dialog box does not appear** **"Find new hardware wizard" ends before the process is completed** * *It may take about 15 seconds (or more) after the USB cable is connected for the V-Synth to be detected.*	Is the USB cable connected correctly?	Make sure that the V-Synth and your computer are correctly connected via a USB cable.
	Is USB enabled on your computer?	Refer to the operation manual for your computer, and make sure that USB is enabled.
	Does your computer meet the USB specifications?	If you are using a computer that does not fulfill the electrical requirements of the USB specifications, operation may be unstable. In this case, you may be able to solve the problem by connecting a USB hub.
		If the above actions do not solve the problem, it is possible that the V-Synth has been incorrectly detected by the computer. As described in **"Deleting Incorrect Device Information"** (p. 147), delete the incorrect device information, then re-install the driver.
"Found unknown device" appears even though you installed the driver	If your computer or USB hub has two or more USB connectors, and you connect the V-Synth to a USB connector to which the V-Synth has never been connected before, the "Unknown device" dialog box may appear even on a computer onto which you have already installed the driver.	Refer to Readme file on the included CD-ROM, and install the driver once again. This is not a malfunction. If the "Found unknown device" dialog box appears even though the V-Synth is connected to the same USB connector as before, it is possible that the computer has detected the V-Synth incorrectly. As described in **"Deleting Incorrect Device Information"** (p. 147), delete the incorrect device information, then re-install the driver.

Problem	Cause	Action
An "Unknown driver found" dialog box appears, and you are unable to install the driver Device Manager shows "?", "!", or "USB Composite Device" Driver is not installed correctly	It is possible that the computer has detected the V-Synth incorrectly.	As described in **"Deleting Incorrect Device Information"** (p. 147), delete the incorrect device information, then re-install the driver.
Can't install/delete/use the driver in Windows XP/2000	Did you log on to Windows as a user with administrative privileges?	In order to install / delete / re-install the driver in Windows XP / 2000, you must be logged into Windows as a user with administrative privileges, such as Administrator. For details, please contact the system administrator for your computer system.
	Did you make "Driver Signing Options"?	In order to install / re-install the driver, you must make "Driver Signing Options."
Windows XP/2000 displays a "Hardware Installation" or "Digital Signature Not Found" dialog box	Did you make "Driver Signing Options"?	In order to install / re-install the driver, you must make the settings described in "Driver Signing Options."

Deleting Incorrect Device Information

Use the following procedure to re-install the driver.

1. **Turn off the power of your computer, and start up Windows with all USB cables disconnected (except for keyboard and mouse).**
2. **After Windows restarts, use a USB cable to connect the V-Synth to your computer.**
3. **Turn on the power of V-Synth.**
4. **Click the Windows Start button, and from the menu that appears, choose Settings | Control Panel.**
5. **Double-click the System icon. The System Properties dialog box will appear.**
6. **Click the Device Manager tab.**
   In Windows XP, select the System Properties Hardware tab, and click Device Manager.
7. **Check whether "Roland V-Synth" with an "!" or "?" symbol is displayed below "Other Devices," "Sound, Video, and Game Controllers," or "Universal Serial Bus Controller." If you find any such indication, select it and click [Delete].**
8. **A dialog box will ask you to confirm deletion of the device. Verify the contents of the dialog box, and then click [OK]. In the same way, delete all occurrences of "Roland V-Synth" that have an "!" or "?" symbol.**
9. **Check whether "Composite USB Device," "USB Device," or "USB Composite Device" with an "!" or "?" symbol is displayed below "Other Devices," "Sound, Video, and Game Controllers," or "Universal Serial Bus Controller." If you find any such indication, you need to determine whether it has appeared because the V-Synth has been detected incorrectly, or because there is a problem with some other device. To determine this, switch off the power of the V-Synth.**

* *If the "Composite USB Device" (or other) indication disappears when you turn off the power of the V-Synth, then it is the V-Synth that has been incorrectly detected. Return to step 2 and continue the procedure, and when you reach step 8, delete the information that was detected incorrectly. If the indication does not disappear when you turn off the power of the V-Synth, then this indication refers to a different device. Do not delete it.*
"Composite USB Device," "USB Device," or "USB Compatible Device" may sometimes indicate a device other than the V-Synth. Be careful not to accidentally delete the registration for another device. If you delete the registration for another device, you will have to reinstall the driver for that device.

10. A dialog box will ask you to confirm deletion of the device. Verify the contents of the dialog box, and click [OK]. Delete each unwanted occurrence of "Composite USB Device," "USB Device," or "USB composite device" indications with an "!" or "?" symbol.

11. Turn off the power of the V-Synth, then delete the driver.

12. Restart Windows. Then install the driver once again.

* *If the problem still occurs after you have taken the above measures, please refer also to the Readme file for the USB driver. The Readme file is on the CD-ROM.*

Problems Related to the USB Driver (Macintosh)

Problem	Cause	Action
A message of "Drivers needed for the USB device "V-Synth" are not available. Would you like to look for these drivers over the internet?" is displayed	It is possible that the V-Synth's USB MIDI driver has not been correctly installed in your computer.	Correctly install the USB MIDI driver as described in Readme file on the included CD-ROM.
	It is possible that there is a conflict with the driver (function extension) of another USB device.	We are aware of a problem that causes the V-Synth to not be recognized correctly if a driver for I-O Data Corporation's USB CD-R drive is installed. In this case, disable "ISD 200 BOTBridge" or other driver file by moving it out of the Extensions folder, located within the system folder.
When the computer returns from the Sleep state, an indication of "MIDI off line!" appears	The V-Synth's USB MIDI driver does not support the Sleep functionality of Mac OS.	Do not use the Sleep functionality of Mac OS. When you use the V-Synth, open the "Energy Saver" control panel and specify "Never" as the period of inactivity before the system goes to sleep.

Message List

The V-Synth displays a variety of messages. There are three types of message screen.

ERROR screen: This will appear if you attempt to perform an incorrect operation, or if an operation could not be executed correctly.

WARNING screen: This will appear when caution is necessary.

Message box: This informs you of the current status. It will also appear if you attempt to perform an incorrect operation, or if an operation could not be executed correctly.

Messages are listed here alphabetically for each type of message screen.

ERROR Screens

If an ERROR screen appears, touch <ACCEPT> to erase the message.

Message	Meaning	Action
DISK **Disk Full!**	The media is full, and no further writing is possible.	Delete unneeded files from the media (p. 88). Alternatively, provide other media that has free space.
DISK **File/Folder Name Duplicate!**	There is an identically named file or folder.	Assign a different name (p. 89). Alternatively, please write to a folder that does not contain an identically-named file or folder.
DISK **File Not Found!**	A patch or sample used by the project or patch was not found on disk.	Re-create the project or patch, and save it.
DISK **File Read Error!**	The data is damaged, and cannot be loaded.	Do not use this file.
DISK **File Write Error!**	The media is of a format to which the V-Synth cannot write.	Prepare a media that is of a format to which the V-Synth is able to write.
DISK **Illegal Format!**	Since the format of this file is incorrect, it cannot be loaded.	Do not use this file.
DISK **Illegal PCM Wave!** **Cannot Load This Wave.**	This file uses a type of compression that the V-Synth is unable to read.	Use the device that created the file to convert the data into an 8 bit or 16 bit wave.
DISK **Memory Full!**	Since the wave memory has become full, the operation was halted.	Delete unneeded samples from the V-Synth. Alternatively, individually import the patches or samples that you want to use.
DISK **Path Duplicate!**	You are attempting to write to the same hierarchical level.	Change the writing destination.
DISK **Path Name Too Long!**	The path name is too long.	Shorten the names of each folder (p. 89). Alternatively, move the entire folder to a shallower level of the hierarchy (p. 87). * The “path” indicates the hierarchical level at which the file is located. It is given together with the folder name.
DISK **PC Card Not Ready!**	The PC card is not ready.	Insert another PC card.
DISK **Too Many Channels!** **Cannot Load This Wave.**	This file contains waves for three or more channels, and cannot be loaded into the V-Synth.	Do not use this file.
DISK **Unformatted Disk!**	This disk cannot be used by the V-Synth.	Format the disk on the V-Synth.
DISK **Unknown Disk Error!**	A disk error of unknown causes has occurred.	Contact your dealer or a nearby Roland service center for service.
DISK **You Cannot Use This Device!**	The operation you attempted to execute does not support this media.	Do not select this media for this operation.
ENCODE **Encoding Error!**	For some reason, encoding is not possible.	Change the encoding type and try again.
ENCODE **Memory Full!**	Due to insufficient wave memory, encoding is not possible.	Shorten the wave (p. 66), or delete unwanted samples from the V-Synth’s memory (p. 60).
IMPORT **No Room for Patches!**	There are no vacant patches.	Delete unneeded patches from the V-Synth (p. 36).
IMPORT **No Room for Samples!**	There are no vacant samples.	Delete unneeded samples from the V-Synth (p. 60).
SAMPLE EDIT **Copy Buffer Not Allocated!**	There is not enough wave memory to execute the Copy.	Shorten the range that will be copied (p. 66), or delete unneeded samples from the V-Synth (p. 60).

Message	Meaning	Action
SAMPLE EDIT Memory Full!	There is not enough wave memory to execute the wave editing operation (Insert, Zero Insert, Region, Paste).	Delete unneeded samples from the V-Synth (p. 60).
SAMPLING Memory Full!	Since the wave memory has become full, the operation was halted.	Delete unneeded samples from the V-Synth (p. 60).

WARNING Screens

If a WARNING screen appears, follow the procedure described in the corresponding "Action."

Message	Meaning	Action
CHANGE USB MODE USB Mode Will Be Changed.	USB mode will be changed.	Exit any USB MIDI-related applications on your computer.
COPY FILE/FOLDER Are You Sure?	The file(s) or folder(s) will be copied from the disk. Is it OK to execute?	To cancel the operation, touch <CANCEL>. To execute the operation, touch <EXECUTE>.
DELETE FILE/FOLDER This Will Clear the File(s)/Folder(s). Are You Sure?	The file(s) or folder(s) will be deleted from the disk. Is it OK to execute?	To cancel the operation, touch <CANCEL>. To execute the operation, touch <EXECUTE>.
DISCONNECT USB Disconnection Will Be Done Before Ejecting. Are You Sure?	Will disconnect before ejecting. Is it OK to execute?	Perform the Eject operation on your computer.
EDITED DATA EXISTS If You Need This Data, Save Immediately.	The V-Synth contains an unsaved patch or sample.	If you need the patch or sample, save it now. Touch <ACCEPT> to erase the message.
FILE/FOLDER EXISTS Overwrite Existing File/Folder?	There is an identically named file or folder at the copy- or move-destination.	To cancel the operation, touch <CANCEL>. To execute the copying or moving operation, touch <EXECUTE>.
FORMAT All Data on the Disk Will Be Lost. Are You Sure?	When you format, all data on the disk will be lost. Is it OK to execute?	To cancel the operation, touch <CANCEL>. To execute the formatting operation, touch <EXECUTE>.
IMPORT FILE Are You Sure?	The file(s) will be imported from the disk. Is it OK to execute?	To cancel the operation, touch <CANCEL>. To execute the importing operation, touch <EXECUTE>.
INITIALIZE PATCH Are You Sure?	The patch will be initialized. Is it OK to execute?	To cancel the operation, touch <CANCEL>. To execute the operation, touch <EXECUTE>.
LOAD DEMO Replace All Data. Are You Sure?	When you load the demo data, all data in the VP-9000 will be lost. Is it OK to execute the operation?	To cancel the operation, touch <CANCEL>. If you wish to load the demo data, touch <EXECUTE>.
LOAD PROJECT Are You Sure?	Project will be loaded. Is it OK to execute the operation?	To cancel the operation, touch <CANCEL>. If you wish to load the project, touch <EXECUTE>.
MOVE FILE/FOLDER Are You Sure?	The file(s) or folder(s) will be moved from the disk. Is it OK to execute?	To cancel the operation, touch <CANCEL>. To execute the operation, touch <EXECUTE>.
OTHER SAMPLE EXISTS Number '**' Already Contains a Sample. Clear Existing Sample?**	A different sample already exists in the selected sample number '*****'.	To cancel the operation, touch <CANCEL>. If you wish to overwrite the sample of the selected number, touch <EXECUTE>.
PROJECT NOT FOUND Internal Project Was Loaded.	Cannot find the project specified as the current project. The internal project was loaded.	Touch <ACCEPT> to erase the message.
SAMPLE EDIT Copy Buffer Not Avail. Are You Sure?	When you perform the Cut or Clear sample editing operation, the data is simultaneously copied as well. However, this message indicates that in this case, there is insufficient memory remaining to copy the data. Do you still want to execute the Cut or Clear? (Since a copy will not be made, you will be unable to restore the data simply by pasting it back. The Cut or Clear operation can still be carried out, though.)	To cancel the operation, touch <CANCEL>. If you also want to Copy the data, shorten the range being Cut or Cleared (p. 66), or delete unneeded samples from the V-Synth (p. 60). To execute the Cut or Clear operation, touch <EXECUTE>.
SAMPLE EXISTS Overwrite Existing Sample?	Sample exists in the copy- or move-destination.	To cancel the operation, touch <CANCEL>. To execute the copying or moving operation, touch <EXECUTE>.
SAVE PROJECT Are You Sure?	Project will be saved. Is it OK to execute the operation?	To cancel the operation, touch <CANCEL>. To execute the operation, touch <EXECUTE>.

Message Boxes

Message boxes are displayed briefly, and then disappear automatically.

Message	Meaning	Action
Canceled!	The operation is canceled.	
Cannot Delete This Event!	The events at the beginning and end of a wave cannot be deleted.	
Checksum Error!	The received system exclusive message has an incorrect checksum value.	Correct the checksum value.
Completed!	The operation has been completed.	
Connecting...	Now establishing a connection.	
Disconnecting...	Now breaking the connection.	
Event Doesn't Exist Here!	There is no event at the specified location.	Specify a location where there is an event.
Event Interval Too Narrow!	The event interval is too narrow for events to be placed in it.	Move the interval further from the nearest event.
Improper Name!	The folder name or volume label is blank.	Assign a name before you execute (p. 89).
MIDI Buffer Full!	An excessive amount of MIDI data was received all at once, and could not be processed properly.	
MIDI Communication Error!	A MIDI hardware error has occurred.	If the same message appears repeatedly, please contact your dealer or a nearby Roland service center for service.
MIDI Offline!	The MIDI IN connection has been broken.	Check whether there is a problem with the MIDI cable connected to the V-Synth's MIDI IN, or whether the MIDI cable has been disconnected.
Please Wait a Minute.	Please wait a short time.	
Processing...	The operation is being executed.	
Transmitting...	The data is being transmitted.	
Error Receiving Data!	MIDI message could not be received correctly.	If the same message appears repeatedly, there is a problem with the content of the MIDI messages.
USB Offline!	USB cable is not connected.	Check whether there is a problem with the USB cable connected to the V-Synth's USB connector, or whether the USB cable has been disconnected.
Writing...	Data is being written.	

About MIDI

MIDI (Musical Instruments Digital Interface) is a standard specification that allows musical data to be exchanged between electronic musical instruments and computers. MIDI With a MIDI cable connecting MIDI devices that are equipped with MIDI connectors, you can play multiple instruments with a single keyboard, have multiple MIDI instruments perform in ensemble, program the settings to change automatically to match the performance as the song progresses, and more.

If you mainly use the V-Synth as a standalone keyboard instrument, you may really not need to know much at all about MIDI. However, the following MIDI-related information is provided so you can play the V-Synth using an external MIDI device, or master other advanced techniques.

About MIDI Connectors

The V-Synth is equipped with the three types of MIDI connectors, each which works differently.

MIDI IN Connector

This connector receives MIDI messages that are transmitted from external MIDI devices. The V-Synth can receive these messages to play notes or select sounds, etc.

MIDI OUT Connector

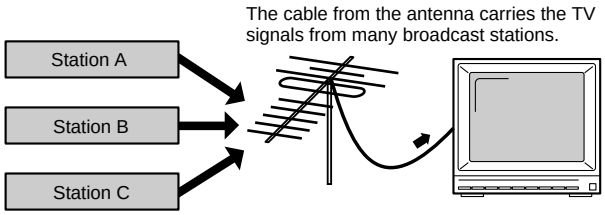
This connector transmits MIDI messages to external MIDI devices. The V-Synth's MIDI OUT connector is used for sending the performance data of the keyboard controller section as well as data used for saving various settings and patterns.

MIDI THRU Connector

MIDI messages received at MIDI IN are re-transmitted without change from this connector to an external MIDI device. Use this in situations such as when you use multiple MIDI devices simultaneously.

MIDI Channels and Multi-timbral Sound Generators

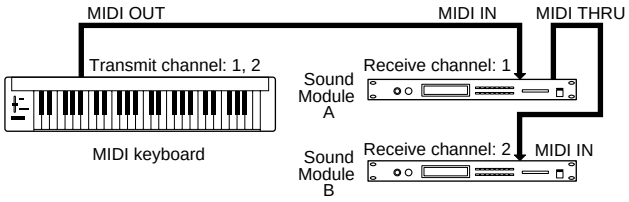
MIDI transmits many types of data over a single MIDI cable. This is made possible by the concept of **MIDI channels**. MIDI channels allow messages intended for a given instrument to be distinguished from messages intended for another instrument. In some ways, MIDI channels are similar to television channels. By changing the channel on a television set, you can view the programs that are being broadcast by different stations. In the same way, MIDI also allows a device to select the information intended for that device out of the variety of information that is being transmitted to it.



MIDI uses sixteen channels; 1 through 16. Set the receiving device so that it will receive only the channel that it needs to receive.

Example:

Set the V-Synth to send Channel 1 and Channel 2, then set sound module A to receive only Channel 1 and sound module B only Channel 2. With this setup, you can get an ensemble performance, with, for example, a guitar sound from sound module A and bass from sound module B.



When used as a sound module, the V-Synth can receive on up to sixteen MIDI channels. Sound modules like the V-Synth which can receive multiple MIDI channels simultaneously to play different sounds on each channel are called **multi-timbral sound modules**.

MIDI Implementation

Model: V-Synth
Date: Nov. 20, 2002
Version: 1.00

1. Receive Data

■Channel Voice Messages

* Not received in Multitimbre mode or Performance mode when the Receive Switch parameter (MULTITIMBRE / MIDI or PERFORM / MIDI) is OFF.

●Note Off

Status	2nd byte	3rd byte
8nH	kkH	vvH
9nH	kkH	00H

n = MIDI channel number: 0H - FH (ch.1 - 16)
kk = note number: 00H - 7FH (0 - 127)
vv = note off velocity: 00H - 7FH (0 - 127)

●Note On

Status	2nd byte	3rd byte
9nH	kkH	vvH

n = MIDI channel number: 0H - FH (ch.1 - 16)
kk = note number: 00H - 7FH (0 - 127)
vv = note on velocity: 01H - 7FH (1 - 127)

●Polyphonic Key Pressure

Status	2nd byte	3rd byte
AnH	kkH	vvH

n = MIDI channel number: 0H - FH (ch.1 - 16)
kk = note number: 00H - 7FH (0 - 127)
vv = Polyphonic Key Pressure: 00H - 7FH (0 - 127)

●Control Change

* If the corresponding Controller number is selected for the Patch Control Source 1, 2, 3, 4, 5, 6, 7 or 8 parameter (PATCH Edit Com Matrix Ctrl), the corresponding effect will occur.

❍Bank Select (Controller number 0, 32)

Status	2nd byte	3rd byte
BnH	00H	mmH
BnH	20H	llH

n = MIDI channel number: 0H - FH (ch.1 - 16)
mm, ll = Bank number: 00 00H - 7F 7FH (bank.1 - bank.16384)

* Not received when the Receive Bank Select (SYSTEM Com MIDI / USB) is OFF.
* The Patches corresponding to each Bank Select are as follows.

BANK SELECT MSB	BANK SELECT LSB	PROGRAM NUMBER	PATCH NUMBER
087	000	001 - 128	001 - 128
	001	001 - 128	129 - 256
	002	001 - 128	257 - 384
	003	001 - 128	385 - 512

❍Portamento Time (Controller number 5)

Status	2nd byte	3rd byte
BnH	05H	vvH

n = MIDI channel number: 0H - FH (ch.1 - 16)
vv = Portamento Time: 00H - 7FH (0 - 127)

❍Data Entry (Controller number 6, 38)

Status	2nd byte	3rd byte
BnH	06H	mmH
BnH	26H	llH

n = MIDI channel number: 0H - FH (ch.1 - 16)
mm, ll = the value of the parameter specified by RPN / NRPN
mm = MSB, ll = LSB

❍Volume (Controller number 7)

Status	2nd byte	3rd byte
BnH	07H	vvH

n = MIDI channel number: 0H - FH (ch.1 - 16)
vv = Volume: 00H - 7FH (0 - 127)

❍Panpot (Controller number 10)

Status	2nd byte	3rd byte
BnH	0AH	vvH

n = MIDI channel number: 0H - FH (ch.1 - 16)
vv = Panpot: 00H - 40H - 7FH (Left - Center - Right),

❍Expression (Controller number 11)

Status	2nd byte	3rd byte
BnH	0BH	vvH

n = MIDI channel number: 0H - FH (ch.1 - 16)
vv = Expression: 00H - 7FH (0 - 127)

❍Hold 1 (Controller number 64)

Status	2nd byte	3rd byte
BnH	40H	vvH

n = MIDI channel number: 0H - FH (ch.1 - 16)
vv = Control value: 00H - 7FH (0 - 127) 0-63 = OFF, 64-127 = ON

❍Portamento (Controller number 65)

Status	2nd byte	3rd byte
BnH	41H	vvH

n = MIDI channel number: 0H - FH (ch.1 - 16)
vv = Control value: 00H - 7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON

❍Sostenuto (Controller number 66)

Status	2nd byte	3rd byte
BnH	42H	vvH

n = MIDI channel number: 0H - FH (ch.1 - 16)
vv = Control value: 00H - 7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON

❍Effect 1 (Reverb Send Level) (Controller number 91)

Status	2nd byte	3rd byte
BnH	5BH	vvH

n = MIDI channel number: 0H - FH (ch.1 - 16)
vv = Reverb Send Level: 00H - 7FH (0 - 127)

❍Effect 3 (Chorus Send Level) (Controller number 93)

Status	2nd byte	3rd byte
BnH	5DH	vvH

n = MIDI channel number: 0H - FH (ch.1 - 16)
vv = Chorus Send Level: 00H - 7FH (0 - 127)

❍RPN MSB/LSB (Controller number 100, 101)

Status	2nd byte	3rd byte
BnH	65H	mmH
BnH	64H	llH

n = MIDI channel number: 0H - FH (ch.1 - 16)
mm = upper byte (MSB) of parameter number specified by RPN
ll = lower byte (LSB) of parameter number specified by RPN

<<< RPN >>>
Control Changes include RPN (Registered Parameter Numbers), which are extended.
When using RPNs, first RPN (Controller numbers 100 and 101; they can be sent in any order) should be sent in order to select the parameter, then
Data Entry (Controller numbers 6 and 38) should be sent to set the value. Once RPN messages are received, Data Entry messages that is received at the same MIDI channel after that are recognized as changing toward the value of the RPN messages. In order not to make any mistakes, transmitting RPN Null is recommended after setting parameters you need.

This device receives the following RPNs.

RPN MSB, LSB	Data entry MSB, LSB	Notes
00H, 00H	mmH, llH	Pitch Bend Sensitivity mm: 00H - 18H (0 - 24 semitones) ll: ignored (processed as 00H) Up to 2 octave can be specified in semitone steps.
00H, 01H	mmH, llH	Channel Fine Tuning mm, ll: 20 00H - 40 00H - 60 00H (-4096 x 100 / 8192 - 0 - +4096 x 100 / 8192 cent)
00H, 02H	mmH, llH	Channel Coarse Tuning mm: 10H - 40H - 70H (-48 - 0 - +48 semitones) ll: ignored (processed as 00H)
7FH, 7FH	---, ---	RPN null RPN and NRPN will be set as "unspecified". Once this setting has been made, subsequent Data Entry messages will be ignored. (It is not necessary to transmit Data Entry for RPN Null settings.) Parameter values that were previously set will not change. mm, ll: ignored

●Program Change

Status	2nd byte	
CnH	ppH	
n = MIDI channel number:		0H - FH (ch.1 - 16)
pp = Program number:		00H - 7FH (prog.1 - prog.128)

* Not received when the Receive Program Change parameter (SYSTEM Com MIDI / USB) is OFF.

●Channel Pressure

Status	2nd byte	
DnH	vvH	
n = MIDI channel number:		0H - FH (ch.1 - 16)
vv = Channel Pressure:		00H - 7FH (0 - 127)

●Pitch Bend Change

Status	2nd byte	3rd byte	
EnH	llH	mmH	
n = MIDI channel number:			0H - FH (ch.1 - 16)
mm, ll = Pitch Bend value:			00 00H - 40 00H - 7F 7FH (-8192 - 0 - +8191)

■Channel Mode Messages

* Not received in when the Receive Switch parameter (SYSTEM Com Part MIDI) is OFF.

●All Sounds Off (Controller number 120)

Status	2nd byte	3rd byte
BnH	78H	00H

n = MIDI channel number: 0H - FH (ch.1 - 16)

* When this message is received, all notes currently sounding on the corresponding channel will be turned off.

●Reset All Controllers (Controller number 121)

Status	2nd byte	3rd byte
BnH	79H	00H

n = MIDI channel number: 0H - FH (ch.1 - 16)

* When this message is received, the following controllers will be set to their reset values.

Controller	Reset value
Pitch Bend Change	+ / -0 (center)
Polyphonic Key Pressure	0 (off)
Channel Pressure	0 (off)
Modulation	0 (off)
Breath Type MSB	0 (min)
Breath Type LSB	0 (min)
Expression	127 (max) However the controller will be at minimum.
Hold 1	0 (off)
Sostenuto	0 (off)
Soft	0 (off)
Hold 2	0 (off)
General Purpose Controller 1 MSB	0 (min)
General Purpose Controller 2 MSB	0 (min)
General Purpose Controller 3 MSB	0 (min)
General Purpose Controller 4 MSB	0 (min)
General Purpose Controller 1 LSB	0 (min)
General Purpose Controller 2 LSB	0 (min)
General Purpose Controller 3 LSB	0 (min)
General Purpose Controller 4 LSB	0 (min)
General Purpose Controller 5	0 (min)
General Purpose Controller 6	0 (min)
General Purpose Controller 7	0 (min)
General Purpose Controller 8	0 (min)
RPN	unset; previously set data will not change

●All Notes Off (Controller number 123)

Status	2nd byte	3rd byte
BnH	7BH	00H

n = MIDI channel number: 0H - FH (ch.1 - 16)

* When All Notes Off is received, all notes on the corresponding channel will be turned off. However, if Hold 1 or Sostenuto is ON, the sound will be continued until these are turned off.

●OMNI OFF (Controller number 124)

Status	2nd byte	3rd byte
BnH	7CH	00H

n = MIDI channel number: 0H - FH (ch.1 - 16)

* The same processing will be carried out as when All Notes Off is received.

●OMNI ON (Controller number 125)

Status	2nd byte	3rd byte
BnH	7DH	00H

n = MIDI channel number: 0H - FH (ch.1 - 16)

* The same processing will be carried out as when All Notes Off is received. OMNI ON will not be turned on.

●MONO (Controller number 126)

Status	2nd byte	3rd byte
BnH	7EH	mmH

n = MIDI channel number: 0H - FH (ch.1 - 16)
mm = mono number: 00H - 10H (0 - 16)

* The same processing will be carried out as when All Notes Off is received.

●POLY (Controller number 127)

Status	2nd byte	3rd byte
BnH	7FH	00H

n = MIDI channel number: 0H - FH (ch.1 - 16)

* The same processing will be carried out as when All Notes Off is received.

■System Realtime Message

●Active Sensing

Status
FEH

* When Active Sensing is received, the unit will begin monitoring the intervals of all further messages. While monitoring, if the interval between messages exceeds 420 ms, the same processing will be carried out as when All Sounds Off, All Notes Off and Reset All Controllers are received, and message interval monitoring will be halted.

■System Exclusive Message

Status	Data byte	Status
F0H	iiH, ddH, ...,eeH	F7H

F0H: System Exclusive Message status
ii = ID number: an ID number (manufacturer ID) to indicate the manufacturer whose Exclusive message this is. Roland's manufacturer ID is 41H.
ID numbers 7EH and 7FH are extensions of the MIDI standard; Universal Non-realtime Messages (7EH) and Universal Realtime Messages (7FH).
dd,...,ee = data: 00H - 7FH (0 - 127)
F7H: EOX (End Of Exclusive)

Of the System Exclusive messages received by this device, the Universal Non-realtime messages and the Universal Realtime messages and the Data Request (RQ1) messages and the Data Set (DT1) messages will be set automatically.

●Universal Non-realtime System Exclusive Messages

❍Identity Request Message

Status	Data byte	Status
F0H	7EH, dev, 06H, 01H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
dev	Device ID (dev: 10H - 1FH, 7FH)
06H	Sub ID#1 (General Information)
01H	Sub ID#2 (Identity Request)
F7H	EOX (End Of Exclusive)

* When this message is received, Identity Reply message (p. 158) will be transmitted.

●Universal Realtime System Exclusive Messages

❍Master Volume

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 01H, llH, mmH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
01H	Sub ID#2 (Master Volume)
llH	Master Volume lower byte
mmH	Master Volume upper byte
F7H	EOX (End Of Exclusive)

* The lower byte (llH) of Master Volume will be handled as 00H.
* The Master Level parameter (SYSTEM Com Master) will change.

❍Master Fine Tuning

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 03H, llH, mmH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
03H	Sub ID#2 (Master Fine Tuning)
llH	Master Fine Tuning LSB
mmH	Master Fine Tuning MSB
F7H	EOX (End Of Exclusive)

mm, ll: 00 00H - 40 00H - 7F 7FH (-100 - 0 - +99.9 [cents])

* The Master Tune parameter (SYSTEM Com Master) will change.

❍Master Coarse Tuning

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 04H, llH, mmH	F7

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
04H	Sub ID#2 (Master Coarse Tuning)
llH	Master Coarse Tuning LSB
mmH	Master Coarse Tuning MSB
F7H	EOX (End Of Exclusive)

llH: ignored (processed as 00H)
mmH: 28H - 40H - 58H (-24 - 0 - +24 [semitones])

* The Master Key Shift parameter (SYSTEM Com Master) will change.

●Global Parameter Control

❍Scale/Octave Tuning Adjust

Status	Data byte	Status
F0H	7EH, 7FH, 08H, 08H, ffH, ggH, hhH, ssH...	F7

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
7FH	Device ID (Broadcast)
08H	Sub ID#1 (MIDI Tuning Standard)
08H	Sub ID#2 (scale / octave tuning 1-byte form)
ffH	Channel / Option byte 1 bits 0 to 1 = channel 15 to 16 bit 2 to 6 = Undefined
ggH	Channel byte 2 bits 0 to 6 = channel 8 to 14
hhH	Channel byte 3 bits 0 to 6 = channel 1 to 7
ssH	12 byte tuning offset of 12 semitones from C to B 00H = -64 [cents] 40H = 0 [cents] (equal temperament) 7FH = +63 [cents]
F7H	EOX (End Of Exclusive)

●Data Transmission

This instrument can use exclusive messages to exchange many varieties of internal settings with other devices.
The model ID of the exclusive messages used by this instrument is 00H 53H.

❍Data Request 1RQ1 (11H)

This message requests the other device to transmit data. The address and size indicate the type and amount of data that is requested.
When a Data Request message is received, if the device is in a state in which it is able to transmit data, and if the address and size are appropriate, the requested data is transmitted as a Data Set 1 (DT1) message. If the conditions are not met, nothing is transmitted.

Status	data byte	status
F0H	41H, dev, 00H, 53H, 11H, aaH, bbH, ccH, ddH, ssH, ttH, uuH, vvH, sum	F7H

Byte	Remarks
F0H	Exclusive status
41H	ID number (Roland)
dev	device ID (dev: 10H - 1FH, 7FH)
00H	model ID #1 (V-Synth)
53H	model ID #2 (V-Synth)
11H	command ID (RQ1)
aaH	address MSB
bbH	address
ccH	address
ddH	address LSB
ssH	size MSB
ttH	size
uuH	size
vvH	size LSB
sum	checksum
F7H	EOX (End Of Exclusive)

* The size of data that can be transmitted at one time is fixed for each type of data. And data requests must be made with a fixed starting address and size. Refer to the address and size given in **"Parameter Address Map"** (p. 159).
* For the checksum, refer to (p. 169).
* Not received when the Receive Exclusive parameter (SYSTEM Com MIDI / USB) is OFF.

❍Data Set 1 DT1 (12H)

Status	Data byte	Status
F0H	41H, dev, 00H, 53H, 12H, aaH, bbH, ccH, ddH, eeH, ... ffH, sum	F7H

Byte	Explanation
F0H	Exclusive status
41H	ID number (Roland)
dev	Device ID (dev: 00H - 1FH, 7FH)
00H	Model ID #1 (V-Synth)
53H	Model ID #2 (V-Synth)
12H	Command ID (DT1)
aaH	Address MSB: upper byte of the starting address of the data to be sent
bbH	Address: upper middle byte of the starting address of the data to be sent
ccH	Address: lower middle byte of the starting address of the data to be sent
ddH	Address LSB: lower byte of the starting address of the data to be sent.
eeH	Data: the actual data to be sent. Multiple bytes of data are transmitted in order starting from the address.
:	:
ffH	Data
sum	Checksum
F7H	EOX (End Of Exclusive)

* The amount of data that can be transmitted at one time depends on the type of data, and data will be transmitted from the specified starting address and size. Refer to the address and size given in **"Parameter Address Map"** (p. 159).
* Data larger than 256 bytes will be divided into packets of 256 bytes or less, and each packet will be sent at an interval of about 20 ms.
* Regarding the checksum, please refer to (p. 169)
* Not received when the Receive Exclusive parameter (SYSTEM Com MIDI / USB) is OFF.

Status	Data byte	Status
F0H	41H, dev, 42H, 12H, aaH, bbH, ccH, ddH, ... eeH, sum	F7H

Byte	Explanation
F0H	Exclusive status
41H	ID number (Roland)
dev	Device ID (dev: 10H - 1FH, 7FH)
42H	Model ID (GS)
12H	Command ID (DT1)
aaH	Address MSB: upper byte of the starting address of the transmitted data
bbH	Address: middle byte of the starting address of the transmitted data
ccH	Address LSB: lower byte of the starting address of the transmitted data
ddH	Data: the actual data to be transmitted. Multiple bytes of data are transmitted starting from the address.
:	:
eeH	Data
sum	Checksum
F7H	EOX (End Of Exclusive)

* The amount of data that can be transmitted at one time depends on the type of data, and data will be transmitted from the specified starting address and size. Refer to the address and size given in **"Parameter Address Map"** (p. 159).
* Data larger than 256 bytes will be divided into packets of 256 bytes or less, and each packet will be sent at an interval of about 20 ms.
* Regarding the checksum, please refer to (p. 169)
* Not received when the Receive Exclusive parameter (SYSTEM Com MIDI / USB) is OFF.

2. Data Transmission

■Channel Voice Messages

●Note Off

Status	2nd byte	3rd byte
8nH	kkH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
kk = note number:	00H - 7FH (0 - 127)	
vv = note off velocity:	00H - 7FH (0 - 127)	

●Note On

Status	2nd byte	3rd byte
9nH	kkH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
kk = note number:	00H - 7FH (0 - 127)	
vv = note on velocity:	01H - 7FH (1 - 127)	

●Control Change

* By selecting a controller number that corresponds to the setting of parameters of controllers (Time Trip Pad, D Beam, Knob, and so on), the V-Synth can transmit any control change message.

❍Bank Select (Controller number 0, 32)

Status	2nd byte	3rd byte
BnH	00H	mmH
BnH	20H	llH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
mm, ll = Bank number:	00 00H - 7F 7FH (bank.1 - bank.16384)	

* These messages are transmitted when Patch is selected. But not transmitted when Transmit Program Change or Transmit Bank Select parameter (SYSTEM Com MIDI/USB) is OFF.

* Although with the V-Synth you can select the Bank Select messages to be transmitted, be sure to refer to the Program Change Map on (p. 153) for the Bank Select messages transmitted when the V-Synth is select a Patch, Rhythm Set, Multitimbre or Performance.

❍Modulation (Controller number 1)

Status	2nd byte	3rd byte
BnH	01H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Modulation depth:	00H - 7FH (0 - 127)	

❍Breath Type MSB (Controller number 2)

Status	2nd byte	3rd byte
BnH	02H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

❍Volume (Controller number 7)

Status	2nd byte	3rd byte
BnH	07H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Volume:	00H - 7FH (0 - 127)	

❍Expression (Controller number 11)

Status	2nd byte	3rd byte
BnH	0BH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Expression:	00H - 7FH (0 - 127)	

❍General Purpose Controller 1 MSB (Controller number 16)

Status	2nd byte	3rd byte
BnH	10H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

❍General Purpose Controller 2 MSB (Controller number 17)

Status	2nd byte	3rd byte
BnH	11H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

❍General Purpose Controller 3 MSB (Controller number 18)

Status	2nd byte	3rd byte
BnH	12H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

❍General Purpose Controller 4 MSB (Controller number 19)

Status	2nd byte	3rd byte
BnH	13H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

❍Breath Type LSB (Controller number 34)

Status	2nd byte	3rd byte
BnH	22H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

❍General Purpose Controller 1 LSB (Controller number 48)

Status	2nd byte	3rd byte
BnH	30H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

❍General Purpose Controller 2 LSB (Controller number 49)

Status	2nd byte	3rd byte
BnH	31H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

❍General Purpose Controller 3 LSB (Controller number 50)

Status	2nd byte	3rd byte
BnH	32H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

❍General Purpose Controller 4 LSB (Controller number 51)

Status	2nd byte	3rd byte
BnH	33H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

❍Hold 1 (Controller number 64)

Status	2nd byte	3rd byte
BnH	40H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127) 0-63 = OFF, 64-127 = ON	

❍General Purpose Controller 5 (Controller number 80)

Status	2nd byte	3rd byte
BnH	50H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

❍General Purpose Controller 6 (Controller number 81)

Status	2nd byte	3rd byte
BnH	51H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

❍General Purpose Controller 7 (Controller number 82)

Status	2nd byte	3rd byte
BnH	52H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

❍General Purpose Controller 8 (Controller number 83)

Status	2nd byte	3rd byte
BnH	53H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

●Program Change

Status	2nd byte
CnH	ppH

n = MIDI channel number: 0H - FH (ch.1 - 16)
pp = Program number: 00H - 7FH (prog.1 - prog.128)

* These messages are transmitted when Patch is selected. But not transmitted when Transmit Program Change parameter (SYSTEM Com MIDI / USB) is OFF.

●Channel Pressure

Status	2nd byte
DnH	vvH

n = MIDI channel number: 0H - FH (ch.1 - 16)
vv = Channel Pressure: 00H - 7FH (0 - 127)

●Pitch Bend Change

Status	2nd byte	3rd byte
EnH	llH	mmH

n = MIDI channel number: 0H - FH (ch.1 - 16)
mm, ll = Pitch Bend value: 00 00H - 40 00H - 7F 7FH (-8192 - 0 - +8191)

■System Realtime Messages

●Active Sensing

Status
FEH

* This message is transmitted at intervals of approximately 250 msec.
* This message is not sent when Transmit Active Sensing parameter (SYSTEM Ctrl Tx) is OFF.

■System Exclusive Messages

Universal Non-realtime System Exclusive Message and Data Set 1 (DT1) are the only System Exclusive messages transmitted by the V-Synth.

●Universal Non-realtime System Exclusive Message

❍Identity Reply Message

Receiving Identity Request Message, the V-Synth send this message.

Status	Data byte	Status
F0H	7EH, dev, 06H, 02H, 41H, 53H, 01H, 00H, 00H, 00H, 01H, 00H, 00H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
dev	Device ID (dev: 10H - 1FH)
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
53H 01H	Device family code
00H 00H	Device family number code
00H 01H 00H 00H	Software revision level
F7H	EOX (End of Exclusive)

●Data Transmission

❍Data Set 1 DT1 (12H)

Status	Data byte	Status
F0H	41H, dev, 00H, 53H, 12H, aaH, bbH, ccH, ddH, eeH, ... ffH, sum	F7H

Byte	Explanation	
F0H	Exclusive status	
41H	ID number (Roland)	
dev	Device ID (dev: 00H - 1FH, 7FH)	
00H	Model ID #1 (V-Synth)	
53H	Model ID #2 (V-Synth)	
12H	Command ID (DT1)	
aaH	Address MSB:	upper byte of the starting address of the data to be sent
bbH	Address:	upper middle byte of the starting address of the data to be sent
ccH	Address:	lower middle byte of the starting address of the data to be sent
ddH	Address LSB:	lower byte of the starting address of the data to be sent.
eeH	Data:	the actual data to be sent. Multiple bytes of data are transmitted in order starting from the address.
:	:	
ffH	Data	
sum	Checksum	
F7H	EOX (End Of Exclusive)	

* The amount of data that can be transmitted at one time depends on the type of data, and data will be transmitted from the specified starting address and size. Refer to the address and size given in **"Parameter Address Map"** (p. 159).
* Data larger than 256 bytes will be divided into packets of 256 bytes or less, and each packet will be sent at an interval of about 20 ms.

3. Parameter Address Map

* Transmission of "#" marked address is divided to some packets. For example, ABH in hexadecimal notation will be divided to 0AH and 0BH, and is sent/received in this order.

1. V-Synth (ModelID = 00H 53H)

Start Address	Description
01 00 00 00	Setup
02 00 00 00	System
10 00 00 00	Temporary Patch (Part 1)
10 01 00 00	Temporary Patch (Part 2)
:	
10 0F 00 00	Temporary Patch (Part 16)
20 00 00 00	User Patch (001)
20 01 00 00	User Patch (002)
:	
23 7F 00 00	User Patch (512)

❍System

Offset Address	Description
00 00 00	System Common
00 40 00	System Controller

❍Patch

Offset Address	Description
00 00 00	Patch Common
00 02 00	Patch MFX
00 04 00	Patch Chorus
00 06 00	Patch Reverb
00 08 00	Patch Controller
00 10 00	Patch Oscillator (Zone 1)
00 11 00	Patch Oscillator (Zone 2)
:	
00 1F 00	Patch Oscillator (Zone 16)
00 20 00	Patch Envelope (Zone 1)
00 22 00	Patch Envelope (Zone 2)
:	
00 3E 00	Patch Envelope (Zone 16)
00 40 00	Patch LFO (Zone 1)
00 41 00	Patch LFO (Zone 2)
:	
00 4F 00	Patch LFO (Zone 16)
00 50 00	Patch COSM1 (Zone 1)
00 51 00	Patch COSM1 (Zone 2)
:	
00 5F 00	Patch COSM1 (Zone 16)
00 60 00	Patch COSM2 (Zone 1)
00 61 00	Patch COSM2 (Zone 2)
:	
00 6F 00	Patch COSM2 (Zone 16)
00 70 00	Patch Arpeggio (Note 1)
00 71 00	Patch Arpeggio (Note 2)
:	
00 7F 00	Patch Arpeggio (Note 16)

❍Setup

Offset Address		Description	
00 00	0aaa aaaa	Part 1 Bank Select MSB (CC# 0)	(0 – 127)
00 01	0aaa aaaa	Part 1 Bank Select LSB (CC# 32)	(0 – 127)
00 02	0aaa aaaa	Part 1 Program Number (PC)	(0 – 127)
00 03	0aaa aaaa	Part 2 Bank Select MSB (CC# 0)	(0 – 127)
00 04	0aaa aaaa	Part 2 Bank Select LSB (CC# 32)	(0 – 127)
00 05	0aaa aaaa	Part 2 Program Number (PC)	(0 – 127)
00 06	0aaa aaaa	Part 3 Bank Select MSB (CC# 0)	(0 – 127)
00 07	0aaa aaaa	Part 3 Bank Select LSB (CC# 32)	(0 – 127)
00 08	0aaa aaaa	Part 3 Program Number (PC)	(0 – 127)
00 09	0aaa aaaa	Part 4 Bank Select MSB (CC# 0)	(0 – 127)
00 0A	0aaa aaaa	Part 4 Bank Select LSB (CC# 32)	(0 – 127)
00 0B	0aaa aaaa	Part 4 Program Number (PC)	(0 – 127)
00 0C	0aaa aaaa	Part 5 Bank Select MSB (CC# 0)	(0 – 127)
00 0D	0aaa aaaa	Part 5 Bank Select LSB (CC# 32)	(0 – 127)
00 0E	0aaa aaaa	Part 5 Program Number (PC)	(0 – 127)
00 0F	0aaa aaaa	Part 6 Bank Select MSB (CC# 0)	(0 – 127)
00 10	0aaa aaaa	Part 6 Bank Select LSB (CC# 32)	(0 – 127)
00 11	0aaa aaaa	Part 6 Program Number (PC)	(0 – 127)
00 12	0aaa aaaa	Part 7 Bank Select MSB (CC# 0)	(0 – 127)
00 13	0aaa aaaa	Part 7 Bank Select LSB (CC# 32)	(0 – 127)
00 14	0aaa aaaa	Part 7 Program Number (PC)	(0 – 127)
00 15	0aaa aaaa	Part 8 Bank Select MSB (CC# 0)	(0 – 127)
00 16	0aaa aaaa	Part 8 Bank Select LSB (CC# 32)	(0 – 127)
00 17	0aaa aaaa	Part 8 Program Number (PC)	(0 – 127)
00 18	0aaa aaaa	Part 9 Bank Select MSB (CC# 0)	(0 – 127)
00 19	0aaa aaaa	Part 9 Bank Select LSB (CC# 32)	(0 – 127)
00 1A	0aaa aaaa	Part 9 Program Number (PC)	(0 – 127)
00 1B	0aaa aaaa	Part 10 Bank Select MSB (CC# 0)	(0 – 127)
00 1C	0aaa aaaa	Part 10 Bank Select LSB (CC# 32)	(0 – 127)
00 1D	0aaa aaaa	Part 10 Program Number (PC)	(0 – 127)
00 1E	0aaa aaaa	Part 11 Bank Select MSB (CC# 0)	(0 – 127)
00 1F	0aaa aaaa	Part 11 Bank Select LSB (CC# 32)	(0 – 127)
00 20	0aaa aaaa	Part 11 Program Number (PC)	(0 – 127)
00 21	0aaa aaaa	Part 12 Bank Select MSB (CC# 0)	(0 – 127)
00 22	0aaa aaaa	Part 12 Bank Select LSB (CC# 32)	(0 – 127)
00 23	0aaa aaaa	Part 12 Program Number (PC)	(0 – 127)
00 24	0aaa aaaa	Part 13 Bank Select MSB (CC# 0)	(0 – 127)
00 25	0aaa aaaa	Part 13 Bank Select LSB (CC# 32)	(0 – 127)
00 26	0aaa aaaa	Part 13 Program Number (PC)	(0 – 127)
00 27	0aaa aaaa	Part 14 Bank Select MSB (CC# 0)	(0 – 127)
00 28	0aaa aaaa	Part 14 Bank Select LSB (CC# 32)	(0 – 127)
00 29	0aaa aaaa	Part 14 Program Number (PC)	(0 – 127)
00 2A	0aaa aaaa	Part 15 Bank Select MSB (CC# 0)	(0 – 127)
00 2B	0aaa aaaa	Part 15 Bank Select LSB (CC# 32)	(0 – 127)
00 2C	0aaa aaaa	Part 15 Program Number (PC)	(0 – 127)
00 2D	0aaa aaaa	Part 16 Bank Select MSB (CC# 0)	(0 – 127)
00 2E	0aaa aaaa	Part 16 Bank Select LSB (CC# 32)	(0 – 127)
00 2F	0aaa aaaa	Part 16 Program Number (PC)	(0 – 127)
00 30	0000 000a	Transpose Switch	(0 – 1) OFF, ON
00 31	0000 aaaa	Transpose Value	(59 – 70) –5 – +6
00 32	0000 0aaa	Octave Shift	(61 – 67) –3 – +3
00 33	0000 000a	Beep Switch	(0 – 1) OFF, ON
00 34	0000 aaaa	Sampling Template	(1 – 8)
00 35	0000 0aaa	Patch Palette Bank	(0 – 7)
00 36	0000 0aaa	Patch Palette Number	(0 – 7)
00 00 00 37	Total Size		

❍System Common

Offset Address		Description	
# 00 00	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd		
		Master Tune	(24 – 2024) –100.0 – +100.0 [cent]
00 04	00aa aaaa	Master Key Shift	(40 – 88) –24 – +24
00 05	0aaa aaaa	Master Level	(0 – 127)
00 06	0000 000a	Patch Remain	(0 – 1) OFF, ON
00 07	0000 000a	Mix/Parallel	(0 – 1) MIX, PARALLEL
00 08	0000 000a	Clock Source	(0 – 1) INT, MIDI
00 09	0000 000a	Clock Out	(0 – 1) OFF, ON
00 0A	0000 000a	Receive Program Change	(0 – 1) OFF, ON
00 0B	0000 000a	Receive Bank Select	(0 – 1) OFF, ON
00 0C	0000 000a	Part 1 Receive Switch	(0 – 1) OFF, ON
00 0D	0000 aaaa	Part 1 Receive Channel	(0 – 15) 1 – 16
00 0E	0000 000a	Part 2 Receive Switch	(0 – 1) OFF, ON
00 0F	0000 aaaa	Part 2 Receive Channel	(0 – 15) 1 – 16
00 10	0000 000a	Part 3 Receive Switch	(0 – 1) OFF, ON
00 11	0000 aaaa	Part 3 Receive Channel	(0 – 15) 1 – 16
00 12	0000 000a	Part 4 Receive Switch	(0 – 1) OFF, ON
00 13	0000 aaaa	Part 4 Receive Channel	(0 – 15) 1 – 16
00 14	0000 000a	Part 5 Receive Switch	(0 – 1) OFF, ON
00 15	0000 aaaa	Part 5 Receive Channel	(0 – 15) 1 – 16
00 16	0000 000a	Part 6 Receive Switch	(0 – 1) OFF, ON
00 17	0000 aaaa	Part 6 Receive Channel	(0 – 15) 1 – 16
00 18	0000 000a	Part 7 Receive Switch	(0 – 1) OFF, ON
00 19	0000 aaaa	Part 7 Receive Channel	(0 – 15) 1 – 16
00 1A	0000 000a	Part 8 Receive Switch	(0 – 1) OFF, ON
00 1B	0000 aaaa	Part 8 Receive Channel	(0 – 15) 1 – 16
00 1C	0000 000a	Part 9 Receive Switch	(0 – 1) OFF, ON
00 1D	0000 aaaa	Part 9 Receive Channel	(0 – 15) 1 – 16
00 1E	0000 000a	Part 10 Receive Switch	(0 – 1) OFF, ON
00 1F	0000 aaaa	Part 10 Receive Channel	(0 – 15) 1 – 16
00 20	0000 000a	Part 11 Receive Switch	(0 – 1) OFF, ON
00 21	0000 aaaa	Part 11 Receive Channel	(0 – 15) 1 – 16
00 22	0000 000a	Part 12 Receive Switch	(0 – 1) OFF, ON
00 23	0000 aaaa	Part 12 Receive Channel	(0 – 15) 1 – 16
00 24	0000 000a	Part 13 Receive Switch	(0 – 1) OFF, ON
00 25	0000 aaaa	Part 13 Receive Channel	(0 – 15) 1 – 16
00 26	0000 000a	Part 14 Receive Switch	(0 – 1) OFF, ON
00 27	0000 aaaa	Part 14 Receive Channel	(0 – 15) 1 – 16
00 28	0000 000a	Part 15 Receive Switch	(0 – 1) OFF, ON
00 29	0000 aaaa	Part 15 Receive Channel	(0 – 15) 1 – 16
00 2A	0000 000a	Part 16 Receive Switch	(0 – 1) OFF, ON
00 2B	0000 aaaa	Part 16 Receive Channel	(0 – 15) 1 – 16
00 2C	000a aaaa	EQ Low Freq	(0 – 19) 50 – 4000 [Hz]
00 2D	000a aaaa	EQ Low Gain	(0 – 30) –15 – +15 [dB]
00 2E	000a aaaa	EQ Mid 1 Freq	(0 – 26) 50 – 20000 [Hz]
00 2F	0000 0aaa	EQ Mid 1 Q	(0 – 5) 0.5 – 8.0
00 30	000a aaaa	EQ Mid 1 Gain	(0 – 30) –15 – +15 [dB]
00 31	000a aaaa	EQ Mid 2 Freq	(0 – 26) 50 – 20000 [Hz]
00 32	0000 0aaa	EQ Mid 2 Q	(0 – 5) 0.5 – 8.0
00 33	000a aaaa	EQ Mid 2 Gain	(0 – 30) –15 – +15 [dB]
00 34	0000 aaaa	EQ Hi Freq	(0 – 8) 2000 – 20000 [Hz]
00 35	000a aaaa	EQ Hi Gain	(0 – 30)

			−15 – +15 [dB]
00 36	000a aaaa	EQ Total Gain	(0 – 30)
			−15 – +15 [dB]
00 37	0000 000a	EQ Switch	(0 – 1)
			OFF, ON
00 00 00 38	Total Size		

❍System Controller

Offset Address		Description	
00 00	0000 000a	Transmit Program Change	(0 – 1)
			OFF, ON
00 01	0000 000a	Transmit Bank Select	(0 – 1)
			OFF, ON
00 02	0aaa aaaa	Keyboard Velocity	(0 – 127)
			REAL, 1 – 127
00 03	0000 00aa	Keyboard Sens	(0 – 2)
			LIGHT, MEDIUM, HEAVY
00 04	000a aaaa	Aftertouch Sens	(0 – 20)
			0 – 200
00 05	000a aaaa	Patch Transmit Channel	(0 – 17)
			1 – 16, RX–CH, OFF
00 06	000a aaaa	Beam Sens L	(0 – 20)
			0 – 200
00 07	000a aaaa	Beam Sens R	(0 – 20)
			0 – 200
00 08	0aaa aaaa	Beam 1 Assign L	(0 – 95)
			OFF, CC01 – CC31, CC33 – CC95
00 09	0aaa aaaa	Beam 1 Assign R	(0 – 95)
			OFF, CC01 – CC31, CC33 – CC95
00 0A	0aaa aaaa	Beam 2 Assign L	(0 – 95)
			OFF, CC01 – CC31, CC33 – CC95
00 0B	0aaa aaaa	Beam 2 Assign R	(0 – 95)
			OFF, CC01 – CC31, CC33 – CC95
00 0C	0aaa aaaa	Beam 3 Assign L	(0 – 95)
			OFF, CC01 – CC31, CC33 – CC95
00 0D	0aaa aaaa	Beam 3 Assign R	(0 – 95)
			OFF, CC01 – CC31, CC33 – CC95
00 0E	0aaa aaaa	Beam 4 Assign L	(0 – 95)
			OFF, CC01 – CC31, CC33 – CC95
00 0F	0aaa aaaa	Beam 4 Assign R	(0 – 95)
			OFF, CC01 – CC31, CC33 – CC95
00 10	0aaa aaaa	Pad Assign X	(0 – 95)
			OFF, CC01 – CC31, CC33 – CC95
00 11	0aaa aaaa	Pad Assign Y	(0 – 95)
			OFF, CC01 – CC31, CC33 – CC95
00 12	0aaa aaaa	Time Trip Assign X	(0 – 95)
			OFF, CC01 – CC31, CC33 – CC95
00 13	0aaa aaaa	Time Trip Assign Y	(0 – 95)
			OFF, CC01 – CC31, CC33 – CC95
00 14	0aaa aaaa	Knob 1 Assign	(0 – 95)
			OFF, CC01 – CC31, CC33 – CC95
00 15	0aaa aaaa	Knob 2 Assign	(0 – 95)
			OFF, CC01 – CC31, CC33 – CC95
00 16	0000 0aaa	Hold Pedal Polarity	(0 – 1)
			STANDARD, REVERSE
00 17	0aaa aaaa	Pedal 1 Assign	(0 – 98)
			OFF, CC01 – CC31, CC33 – CC95, BEND–UP, BEND–DOWN, AFT
00 18	0000 0aaa	Pedal 1 Polarity	(0 – 1)
			STANDARD, REVERSE
00 19	0aaa aaaa	Pedal 2 Assign	(0 – 98)
			OFF, CC01 – CC31, CC33 – CC95, BEND–UP, BEND–DOWN, AFT
00 1A	0000 0aaa	Pedal 2 Polarity	(0 – 1)
			STANDARD, REVERSE
00 00 00 1B	Total Size		

❍Patch Common

Offset Address		Description	
00 00	0aaa aaaa	Patch Name 1	(32 – 127)
			32 – 127 [ASCII]
00 01	0aaa aaaa	Patch Name 2	(32 – 127)
			32 – 127 [ASCII]
00 02	0aaa aaaa	Patch Name 3	(32 – 127)
			32 – 127 [ASCII]
00 03	0aaa aaaa	Patch Name 4	(32 – 127)
			32 – 127 [ASCII]
00 04	0aaa aaaa	Patch Name 5	(32 – 127)
			32 – 127 [ASCII]
00 05	0aaa aaaa	Patch Name 6	(32 – 127)
			32 – 127 [ASCII]
00 06	0aaa aaaa	Patch Name 7	(32 – 127)
			32 – 127 [ASCII]
00 07	0aaa aaaa	Patch Name 8	(32 – 127)
			32 – 127 [ASCII]
00 08	0aaa aaaa	Patch Name 9	(32 – 127)
			32 – 127 [ASCII]
00 09	0aaa aaaa	Patch Name 10	(32 – 127)
			32 – 127 [ASCII]
00 0A	0aaa aaaa	Patch Name 11	(32 – 127)
			32 – 127 [ASCII]
00 0B	0aaa aaaa	Patch Name 12	(32 – 127)
			32 – 127 [ASCII]
00 0C	0aaa aaaa	(reserved)	(0 – 127)
00 0D	0aaa aaaa	Patch Coarse Tune	(16 – 112)
			−48 – +48
00 0E	0aaa aaaa	Patch Fine Tune	(14 – 114)
			−50 – +50
00 0F	0000 0aaa	Octave Shift	(61 – 67)
			−3 – +3
00 10	0000 000a	Mono/Poly	(0 – 1)
			MONO, POLY
00 11	0000 000a	Legato Switch	(0 – 1)
			OFF, ON
00 12	0000 000a	Portamento Switch	(0 – 1)
			OFF, ON
00 13	0000 000a	Portamento Mode	(0 – 1)
			NORMAL, LEGATO
00 14	0000 000a	Portamento Type	(0 – 1)
			RATE, TIME
00 15	0aaa aaaa	Portamento Time	(0 – 127)
00 16	0aaa aaaa	Portamento Time Velocity Sens	(1 – 127)
			−63 – +63
# 00 17	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Patch Tempo	(200 – 2500)
			20.0 – 250.0
00 1B	00aa aaaa	Pitch Bend Range Up	(0 – 48)
00 1C	00aa aaaa	Pitch Bend Range Down	(0 – 48)
00 1D	0000 000a	MFX Switch	(0 – 1)
			BYPASS, ON
00 1E	0000 000a	Chorus Switch	(0 – 1)
			OFF, ON
00 1F	0000 000a	Reverb Switch	(0 – 1)
			OFF, ON
00 20	0000 aaaa	Current Zone	(0 – 15)
			ZONE1 – ZONE16
00 21	0aaa aaaa	Zone 1 Range Upper	(0 – 127)
			C–1 – G9
00 22	0aaa aaaa	Zone 2 Range Upper	(0 – 127)
			C–1 – G9
00 23	0aaa aaaa	Zone 3 Range Upper	(0 – 127)
			C–1 – G9
00 24	0aaa aaaa	Zone 4 Range Upper	(0 – 127)
			C–1 – G9
00 25	0aaa aaaa	Zone 5 Range Upper	(0 – 127)
			C–1 – G9
00 26	0aaa aaaa	Zone 6 Range Upper	(0 – 127)
			C–1 – G9
00 27	0aaa aaaa	Zone 7 Range Upper	(0 – 127)
			C–1 – G9
00 28	0aaa aaaa	Zone 8 Range Upper	(0 – 127)
			C–1 – G9
00 29	0aaa aaaa	Zone 9 Range Upper	(0 – 127)
			C–1 – G9
00 2A	0aaa aaaa	Zone 10 Range Upper	(0 – 127)
			C–1 – G9
00 2B	0aaa aaaa	Zone 11 Range Upper	(0 – 127)
			C–1 – G9
00 2C	0aaa aaaa	Zone 12 Range Upper	(0 – 127)
			C–1 – G9
00 2D	0aaa aaaa	Zone 13 Range Upper	(0 – 127)
			C–1 – G9
00 2E	0aaa aaaa	Zone 14 Range Upper	(0 – 127)
			C–1 – G9
00 2F	0aaa aaaa	Zone 15 Range Upper	(0 – 127)
			C–1 – G9
00 30	0aaa aaaa	Zone 16 Range Upper	(0 – 127)
			C–1 – G9
00 31	0000 000a	Scale Tune Switch	(0 – 1)
			OFF, ON
# 00 32	0000 aaaa 0000 bbbb	Patch Scale Tune for C	(28 – 228) −100 – +100
# 00 34	0000 aaaa 0000 bbbb	Patch Scale Tune for C#	(28 – 228) −100 – +100
# 00 36	0000 aaaa 0000 bbbb	Patch Scale Tune for D	(28 – 228) −100 – +100
# 00 38	0000 aaaa 0000 bbbb	Patch Scale Tune for D#	(28 – 228) −100 – +100
# 00 3A	0000 aaaa 0000 bbbb	Patch Scale Tune for E	(28 – 228) −100 – +100
# 00 3C	0000 aaaa 0000 bbbb	Patch Scale Tune for F	(28 – 228) −100 – +100
# 00 3E	0000 aaaa 0000 bbbb	Patch Scale Tune for F#	(28 – 228) −100 – +100
# 00 40	0000 aaaa 0000 bbbb	Patch Scale Tune for G	(28 – 228) −100 – +100
# 00 42	0000 aaaa 0000 bbbb	Patch Scale Tune for G#	(28 – 228) −100 – +100
# 00 44	0000 aaaa 0000 bbbb	Patch Scale Tune for A	(28 – 228) −100 – +100
# 00 46	0000 aaaa 0000 bbbb	Patch Scale Tune for A#	(28 – 228) −100 – +100
# 00 48	0000 aaaa 0000 bbbb	Patch Scale Tune for B	(28 – 228) −100 – +100
00 4A	0aaa aaaa	Matrix Control 1 Source	(0 – 108)
		OFF, CC01 – CC31, CC33 – CC95, BEND, AFT, +PAD–X, +PAD–Y, PAD–X, PAD–Y, TRIP–R, BEAM–L, BEAM–R, KNOB1, KNOB2, VELO, KEYF	
00 4B	0aaa aaaa	Matrix Control 1 Dest 1	(0 – 77)
			OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL, OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT, OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL, OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 4C	0aaa aaaa	Matrix Control 1 Sens 1	(1 – 127)
			−63 – +63
00 4D	0aaa aaaa	Matrix Control 1 Dest 2	(0 – 77)
			OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL, OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT, OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL,

		OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 4E	0aaa aaaa	Matrix Control 1 Sens 2 (1 – 127) –63 – +63
00 4F	0aaa aaaa	Matrix Control 2 Source (0 – 108) OFF, CC01 – CC31, CC33 – CC95, BEND, AFT, +PAD–X, +PAD–Y, PAD–X, PAD–Y, TRIP–R, BEAM–L, BEAM–R, KNOB1, KNOB2, VELO, KEYF
00 50	0aaa aaaa	Matrix Control 2 Dest 1 (0 – 77) OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL, OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT, OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL, OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 51	0aaa aaaa	Matrix Control 2 Sens 1 (1 – 127) –63 – +63
00 52	0aaa aaaa	Matrix Control 2 Dest 2 (0 – 77) OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL, OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT, OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL, OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 53	0aaa aaaa	Matrix Control 2 Sens 2 (1 – 127) –63 – +63
00 54	0aaa aaaa	Matrix Control 3 Source (0 – 108) OFF, CC01 – CC31, CC33 – CC95, BEND, AFT, +PAD–X, +PAD–Y, PAD–X, PAD–Y, TRIP–R, BEAM–L, BEAM–R, KNOB1, KNOB2, VELO, KEYF
00 55	0aaa aaaa	Matrix Control 3 Dest 1 (0 – 77) OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL, OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT, OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL, OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 56	0aaa aaaa	Matrix Control 3 Sens 1 (1 – 127) –63 – +63
00 57	0aaa aaaa	Matrix Control 3 Dest 2 (0 – 77) OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL, OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT,

		OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL, OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 58	0aaa aaaa	Matrix Control 3 Sens 2 (1 – 127) –63 – +63
00 59	0aaa aaaa	Matrix Control 4 Source (0 – 108) OFF, CC01 – CC31, CC33 – CC95, BEND, AFT, +PAD–X, +PAD–Y, PAD–X, PAD–Y, TRIP–R, BEAM–L, BEAM–R, KNOB1, KNOB2, VELO, KEYF
00 5A	0aaa aaaa	Matrix Control 4 Dest 1 (0 – 77) OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL, OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT, OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL, OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 5B	0aaa aaaa	Matrix Control 4 Sens 1 (1 – 127) –63 – +63
00 5C	0aaa aaaa	Matrix Control 4 Dest 2 (0 – 77) OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL, OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT, OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL, OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 5D	0aaa aaaa	Matrix Control 4 Sens 2 (1 – 127) –63 – +63
00 5E	0aaa aaaa	Matrix Control 5 Source (0 – 108) OFF, CC01 – CC31, CC33 – CC95, BEND, AFT, +PAD–X, +PAD–Y, PAD–X, PAD–Y, TRIP–R, BEAM–L, BEAM–R, KNOB1, KNOB2, VELO, KEYF
00 5F	0aaa aaaa	Matrix Control 5 Dest 1 (0 – 77) OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL, OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT, OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL, OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 60	0aaa aaaa	Matrix Control 5 Sens 1 (1 – 127) –63 – +63
00 61	0aaa aaaa	Matrix Control 5 Dest 2 (0 – 77) OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL,

		OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT, OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL, OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 62	0aaa aaaa	Matrix Control 5 Sens 2 (1 – 127) –63 – +63
00 63	0aaa aaaa	Matrix Control 6 Source (0 – 108) OFF, CC01 – CC31, CC33 – CC95, BEND, AFT, +PAD–X, +PAD–Y, PAD–X, PAD–Y, TRIP–R, BEAM–L, BEAM–R, KNOB1, KNOB2, VELO, KEYF
00 64	0aaa aaaa	Matrix Control 6 Dest 1 (0 – 77) OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL, OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT, OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL, OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 65	0aaa aaaa	Matrix Control 6 Sens 1 (1 – 127) –63 – +63
00 66	0aaa aaaa	Matrix Control 6 Dest 2 (0 – 77) OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL, OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT, OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL, OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 67	0aaa aaaa	Matrix Control 6 Sens 2 (1 – 127) –63 – +63
00 68	0aaa aaaa	Matrix Control 7 Source (0 – 108) OFF, CC01 – CC31, CC33 – CC95, BEND, AFT, +PAD–X, +PAD–Y, PAD–X, PAD–Y, TRIP–R, BEAM–L, BEAM–R, KNOB1, KNOB2, VELO, KEYF
00 69	0aaa aaaa	Matrix Control 7 Dest 1 (0 – 77) OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL, OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT, OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL, OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 6A	0aaa aaaa	Matrix Control 7 Sens 1 (1 – 127) –63 – +63
00 6B	0aaa aaaa	Matrix Control 7 Dest 2 (0 – 77) OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL, OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT, OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL, OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 6C	0aaa aaaa	Matrix Control 7 Sens 2 (1 – 127) –63 – +63
00 6D	0aaa aaaa	Matrix Control 8 Source (0 – 108) OFF, CC01 – CC31, CC33 – CC95, BEND, AFT, +PAD–X, +PAD–Y, PAD–X, PAD–Y, TRIP–R, BEAM–L, BEAM–R, KNOB1, KNOB2, VELO, KEYF
00 6E	0aaa aaaa	Matrix Control 8 Dest 1 (0 – 77) OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL, OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT, OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL, OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 6F	0aaa aaaa	Matrix Control 8 Sens 1 (1 – 127) –63 – +63
00 70	0aaa aaaa	Matrix Control 8 Dest 2 (0 – 77) OFF, OSC1–PITCH, OSC1–TIME/PW, OSC1–FORMA/FAT, OSC1–LVL, OSC1–PENV–ATK, OSC1–PENV–DCY, OSC1–PENV–REL, OSC1–TENV–ATK, OSC1–TENV–DCY, OSC1–TENV–REL, OSC1–FENV–ATK, OSC1–FENV–DCY, OSC1–FENV–REL, OSC1–AENV–ATK, OSC1–AENV–DCY, OSC1–AENV–REL, OSC1–LFO–RATE, OSC1–LFO–PCH, OSC1–LFO–TM/PW, OSC1–LFO–FR/FT, OSC1–LFO–LVL, OSC2–PITCH, OSC2–TIME/PW, OSC2–FORMA/FAT, OSC2–LVL, OSC2–PENV–ATK, OSC2–PENV–DCY, OSC2–PENV–REL, OSC2–TENV–ATK, OSC2–TENV–DCY, OSC2–TENV–REL, OSC2–FENV–ATK, OSC2–FENV–DCY, OSC2–FENV–REL, OSC2–AENV–ATK, OSC2–AENV–DCY, OSC2–AENV–REL, OSC2–LFO–RATE, OSC2–LFO–PCH, OSC2–LFO–TM/PW, OSC2–LFO–FR/FT, OSC2–LFO–LVL, CSM1–PRM1, CSM1–PRM2, CSM1–ENV1–ATK, CSM1–ENV1–DCY, CSM1–ENV1–REL, CSM1–ENV2–ATK, CSM1–ENV2–DCY, CSM1–ENV2–REL, CSM1–LFO–RATE, CSM1–LFO–PRM1, CSM1–LFO–PRM2, CSM2–PRM1, CSM2–PRM2, CSM2–ENV1–ATK, CSM2–ENV1–DCY, CSM2–ENV1–REL, CSM2–ENV2–ATK, CSM2–ENV2–DCY, CSM2–ENV2–REL, CSM2–LFO–RATE, CSM2–LFO–PRM1, CSM2–LFO–PRM2, TVA–LVL, TVA–ENV–ATK, TVA–ENV–DCY, TVA–ENV–REL, TVA–LFO–RATE, TVA–LFO–LVL, TVA–LFO–PAN, MFX–SEND, CHO–SEND, REV–SEND, MFX–PRM1, MFX–PRM2, MFX–PRM3
00 71	0aaa aaaa	Matrix Control 8 Sens 2 (1 – 127) –63 – +63
00 00 00 72	Total Size	

❍Patch MFX

Offset Address		Description	
00 00	0aaa aaaa	MFX Type	(0 – 41)
00 01	0aaa aaaa	MFX Master Level	(0 – 127)
00 02	0aaa aaaa	MFX Chorus Send Level	(0 – 127)
00 03	0aaa aaaa	MFX Reverb Send Level	(0 – 127)
# 00 04	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 1	(12768 – 52768) –20000 – +20000
# 00 08	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 2	(12768 – 52768) –20000 – +20000
# 00 0C	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 3	(12768 – 52768) –20000 – +20000
# 00 10	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 4	(12768 – 52768) –20000 – +20000

#	00 14	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 5	(12768 – 52768) –20000 – +20000
#	00 18	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 6	(12768 – 52768) –20000 – +20000
#	00 1C	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 7	(12768 – 52768) –20000 – +20000
#	00 20	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 8	(12768 – 52768) –20000 – +20000
#	00 24	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 9	(12768 – 52768) –20000 – +20000
#	00 28	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 10	(12768 – 52768) –20000 – +20000
#	00 2C	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 11	(12768 – 52768) –20000 – +20000
#	00 30	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 12	(12768 – 52768) –20000 – +20000
#	00 34	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 13	(12768 – 52768) –20000 – +20000
#	00 38	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 14	(12768 – 52768) –20000 – +20000
#	00 3C	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 15	(12768 – 52768) –20000 – +20000
#	00 40	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 16	(12768 – 52768) –20000 – +20000
#	00 44	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 17	(12768 – 52768) –20000 – +20000
#	00 48	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 18	(12768 – 52768) –20000 – +20000
#	00 4C	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 19	(12768 – 52768) –20000 – +20000
#	00 50	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 20	(12768 – 52768) –20000 – +20000
#	00 54	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 21	(12768 – 52768) –20000 – +20000
#	00 58	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 22	(12768 – 52768) –20000 – +20000
#	00 5C	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 23	(12768 – 52768) –20000 – +20000
#	00 60	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 24	(12768 – 52768) –20000 – +20000
#	00 64	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 25	(12768 – 52768) –20000 – +20000
#	00 68	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 26	(12768 – 52768) –20000 – +20000
#	00 6C	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 27	(12768 – 52768) –20000 – +20000
#	00 70	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 28	(12768 – 52768) –20000 – +20000
#	00 74	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 29	(12768 – 52768) –20000 – +20000
#	00 78	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 30	(12768 – 52768) –20000 – +20000
#	00 7C	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 31	(12768 – 52768) –20000 – +20000
#	01 00	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 32	(12768 – 52768) –20000 – +20000
	00 00 01 04	Total Size		

❍Patch Chorus

Offset Address		Description	
	00 00	0000 aaaa	Chorus Type (0 – 8)
	00 01	0aaa aaaa	Chorus Master Level (0 – 127)
	00 02	0aaa aaaa	Chorus Reverb Send Level (0 – 127)
#	00 03	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 1 (12768 – 52768) –20000 – +20000
#	00 07	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 2 (12768 – 52768) –20000 – +20000
#	00 0B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 3 (12768 – 52768) –20000 – +20000
#	00 0F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 4 (12768 – 52768) –20000 – +20000
#	00 13	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 5 (12768 – 52768) –20000 – +20000
#	00 17	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 6 (12768 – 52768) –20000 – +20000
#	00 1B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 7 (12768 – 52768) –20000 – +20000
#	00 1F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 8 (12768 – 52768) –20000 – +20000
#	00 23	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 9 (12768 – 52768) –20000 – +20000
#	00 27	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 10 (12768 – 52768) –20000 – +20000
#	00 2B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 11 (12768 – 52768) –20000 – +20000
#	00 2F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 12 (12768 – 52768) –20000 – +20000
	00 00 00 33	Total Size	

❍Patch Reverb

Offset Address		Description	
	00 00	0000 aaaa	Reverb Type (0 – 10)
	00 01	0aaa aaaa	Reverb Master Level (0 – 127)
#	00 02	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 1 (12768 – 52768) –20000 – +20000
#	00 06	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 2 (12768 – 52768) –20000 – +20000
#	00 0A	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 3 (12768 – 52768) –20000 – +20000
#	00 0E	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 4 (12768 – 52768) –20000 – +20000
#	00 12	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 5 (12768 – 52768) –20000 – +20000
#	00 16	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 6 (12768 – 52768) –20000 – +20000
#	00 1A	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 7 (12768 – 52768) –20000 – +20000
#	00 1E	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 8 (12768 – 52768) –20000 – +20000
#	00 22	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 9 (12768 – 52768) –20000 – +20000
#	00 26	0000 aaaa	

	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 10	(12768 – 52768) –20000 – +20000
# 00 2A	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 11	(12768 – 52768) –20000 – +20000
# 00 2E	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 12	(12768 – 52768) –20000 – +20000
# 00 32	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 13	(12768 – 52768) –20000 – +20000
# 00 36	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 14	(12768 – 52768) –20000 – +20000
# 00 3A	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 15	(12768 – 52768) –20000 – +20000
# 00 3E	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 16	(12768 – 52768) –20000 – +20000
# 00 42	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 17	(12768 – 52768) –20000 – +20000
# 00 46	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 18	(12768 – 52768) –20000 – +20000
# 00 4A	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 19	(12768 – 52768) –20000 – +20000
# 00 4E	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 20	(12768 – 52768) –20000 – +20000
# 00 52	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 21	(12768 – 52768) –20000 – +20000
# 00 56	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 22	(12768 – 52768) –20000 – +20000
# 00 5A	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 23	(12768 – 52768) –20000 – +20000
# 00 5E	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 24	(12768 – 52768) –20000 – +20000
00 00 00 62	Total Size		

❍Patch Oscillator

Offset Address		Description	
00 00	0000 00aa	Structure Type	(0 – 2) 1 – 3
00 01	0000 000a	MOD Switch	(0 – 1) OFF, ON
00 02	0000 0aaa	MOD Type	(0 – 4) MIX, RING(AM), FM, ENV RING, OSC SYNC
00 03	0aaa aaaa	MOD Original Level	(0 – 127)
00 04	0aaa aaaa	MOD Attack Time	(0 – 127)
00 05	0aaa aaaa	MOD Release Time	(0 – 127)
00 06	0000 000a	TVA Switch	(0 – 1) OFF, ON
00 07	0aaa aaaa	TVA Level	(0 – 127)
00 08	00aa aaaa	TVA Level Keyfollow	(44 – 84) –200 – +200
00 09	0aaa aaaa	TVA Level LFO Depth	(1 – 127) –63 – +63
00 0A	0aaa aaaa	TVA Pan	(0 – 127) L64 – 63R
00 0B	00aa aaaa	TVA Pan Keyfollow	(44 – 84) –200 – +200
00 0C	0aaa aaaa	TVA Pan LFO Depth	(1 – 127) –63 – +63
00 0D	0aaa aaaa	MFX Send Level	(0 – 127)
00 0E	0aaa aaaa	Chorus Send Level	(0 – 127)
00 0F	0aaa aaaa	Reverb Send Level	(0 – 127)
00 10	0000 00aa	Output Assign	(0 – 2) MULTI, MAIN, DIR
00 11	0000 000a	OSC 1 Switch	(0 – 1) OFF, ON
00 12	0000 00aa	OSC 1 Type	(0 – 2) ANALOG, PCM, EXTIN
00 13	000a aaaa	OSC 1 Wave Gain	(52 – 76) –12 – +12 [dB]
00 14	0aaa aaaa	OSC 1 Pitch	(1 – 127) –63 – +63
00 15	00aa aaaa	OSC 1 Pitch Keyfollow	(44 – 84) –200 – +200
00 16	0aaa aaaa	OSC 1 Pitch LFO Depth	(1 – 127) –63 – +63
00 17	0aaa aaaa	OSC 1 Pitch Envelope Depth	(1 – 127) –63 – +63
00 18	0aaa aaaa	OSC 1 Coarse Tune	(16 – 112) –48 – +48
00 19	0aaa aaaa	OSC 1 Fine Tune	(14 – 114) –50 – +50 [cent]
00 1A	000a aaaa	OSC 1 Random Pitch Depth	(0 – 30) 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200
00 1B	0aaa aaaa	OSC 1 Level	(0 – 127)
00 1C	00aa aaaa	OSC 1 Level Keyfollow	(44 – 84) –200 – +200
00 1D	0aaa aaaa	OSC 1 Level LFO Depth	(1 – 127) –63 – +63
00 1E	0000 aaaa	OSC 1 Analog Waveform	(0 – 8) SAW, SQUARE, TRIANGLE, SINE, RAMP, JUNO, HQ–SAW, HQ–SQUARE, NOISE
00 1F	00aa aaaa	OSC 1 Impact	(0 – 40) 0.0 – 4.0
00 20	0aaa aaaa	OSC 1 Pulse Width	(1 – 127) –63 – +63
00 21	00aa aaaa	OSC 1 Pulse Width Keyfollow	(44 – 84) –200 – +200
00 22	0aaa aaaa	OSC 1 Pulse Width LFO Depth	(1 – 127) –63 – +63
00 23	0aaa aaaa	OSC 1 Pulse Width Envelope Depth	(1 – 127) –63 – +63
00 24	0aaa aaaa	OSC 1 Fat	(0 – 127)
00 25	00aa aaaa	OSC 1 Fat Keyfollow	(44 – 84) –200 – +200
00 26	0aaa aaaa	OSC 1 Fat LFO Depth	(1 – 127) –63 – +63
00 27	0aaa aaaa	OSC 1 Fat Envelope Depth	(1 – 127) –63 – +63
# 00 28	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	OSC 1 Wave Number	(0 – 999) OFF, 1 – 999
# 00 2C	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd		
	0000 eeee		
	0000 ffff		
	0000 gggg		
	0000 hhhh	OSC 1 Start Offset	0000000h - FFFFFFFh
00 34	0aaa aaaa	OSC 1 Time	(1 – 127) –63 – +63
00 35	00aa aaaa	OSC 1 Time Keyfollow	(44 – 84) –200 – +200
00 36	0aaa aaaa	OSC 1 Time LFO Depth	(1 – 127) –63 – +63
00 37	0aaa aaaa	OSC 1 Time Envelope Depth	(1 – 127) –63 – +63
00 38	0000 00aa	OSC 1 Time Offset	(0 – 2) BWD, ZERO, FWD
00 39	0aaa aaaa	OSC 1 Formant	(1 – 127) –63 – +63
00 3A	00aa aaaa	OSC 1 Formant Keyfollow	(44 – 84) –200 – +200
00 3B	0aaa aaaa	OSC 1 Formant LFO Depth	(1 – 127) –63 – +63
00 3C	0aaa aaaa	OSC 1 Formant Envelope Depth	(1 – 127) –63 – +63
00 3D	0000 000a	OSC 1 Tempo Sync Sw	(0 – 1) OFF, ON
00 3E	0000 000a	OSC 1 Robot Voice Sw	(0 – 1) OFF, ON
00 3F	0000 00aa	OSC 1 Playback Mode	(0 – 3) RETRIGGER, LEGATO, STEP, EVENT
00 40	0000 000a	OSC 1 Loop Sw	(0 – 1) OFF, ON
00 41	0000 000a	OSC 1 Vari Sw	(0 – 1) OFF, ON
00 42	0aaa aaaa	OSC 1 Energy	(0 – 127) OFF, 1 - 127
00 43	0000 000a	OSC 1 Time Trip Sw	(0 – 1) OFF, ON
00 44	0000 000a	OSC 1 Time Trip Beat Keep	(0 – 1) OFF, ON
00 45	0000 000a	OSC 2 Switch	(0 – 1) OFF, ON
00 46	0000 00aa	OSC 2 Type	(0 – 2) ANALOG, PCM, EXTIN
00 47	000a aaaa	OSC 2 Wave Gain	(52 – 76) –12 – +12 [dB]
00 48	0aaa aaaa	OSC 2 Pitch	(1 – 127) –63 – +63
00 49	00aa aaaa	OSC 2 Pitch Keyfollow	(44 – 84) –200 – +200
00 4A	0aaa aaaa	OSC 2 Pitch LFO Depth	(1 – 127) –63 – +63
00 4B	0aaa aaaa	OSC 2 Pitch Envelope Depth	(1 – 127) –63 – +63
00 4C	0aaa aaaa	OSC 2 Coarse Tune	(16 – 112) –48 – +48
00 4D	0aaa aaaa	OSC 2 Fine Tune	(14 – 114) –50 – +50 [cent]
00 4E	000a aaaa	OSC 2 Random Pitch Depth	(0 – 30) 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200
00 4F	0aaa aaaa	OSC 2 Level	(0 – 127)
00 50	00aa aaaa	OSC 2 Level Keyfollow	(44 – 84) –200 – +200
00 51	0aaa aaaa	OSC 2 Level LFO Depth	(1 – 127) –63 – +63
00 52	0000 aaaa	OSC 2 Analog Waveform	(0 – 8) SAW, SQUARE, TRIANGLE, SINE, RAMP, JUNO, HQ–SAW, HQ–SQUARE, NOISE
00 53	00aa aaaa	OSC 2 Impact	(0 – 40) 0.0 – 4.0
00 54	0aaa aaaa	OSC 2 Pulse Width	(1 – 127) –63 – +63
00 55	00aa aaaa	OSC 2 Pulse Width Keyfollow	(44 – 84) –200 – +200
00 56	0aaa aaaa	OSC 2 Pulse Width LFO Depth	(1 – 127) –63 – +63
00 57	0aaa aaaa	OSC 2 Pulse Width Envelope Depth	(1 – 127) –63 – +63
00 58	0aaa aaaa	OSC 2 Fat	(0 – 127)
00 59	00aa aaaa	OSC 2 Fat Keyfollow	(44 – 84) –200 – +200
00 5A	0aaa aaaa	OSC 2 Fat LFO Depth	(1 – 127) –63 – +63
00 5B	0aaa aaaa	OSC 2 Fat Envelope Depth	(1 – 127) –63 – +63
# 00 5C	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	OSC 2 Wave Number	(0 – 999) OFF, 1 – 999
# 00 60	0000 aaaa		
	0000 bbbb		
	0000 cccc		

	0000 dddd 0000 eeee 0000 ffff 0000 gggg 0000 hhhh	OSC 2 Start Offset	0000000h - FFFFFFFh
00 68	0aaa aaaa	OSC 2 Time	(1 – 127) –63 – +63
00 69	00aa aaaa	OSC 2 Time Keyfollow	(44 – 84) –200 – +200
00 6A	0aaa aaaa	OSC 2 Time LFO Depth	(1 – 127) –63 – +63
00 6B	0aaa aaaa	OSC 2 Time Envelope Depth	(1 – 127) –63 – +63
00 6C	0000 00aa	OSC 2 Time Offset	(0 – 2) BWD, ZERO, FWD
00 6D	0aaa aaaa	OSC 2 Formant	(1 – 127) –63 – +63
00 6E	00aa aaaa	OSC 2 Formant Keyfollow	(44 – 84) –200 – +200
00 6F	0aaa aaaa	OSC 2 Formant LFO Depth	(1 – 127) –63 – +63
00 70	0aaa aaaa	OSC 2 Formant Envelope Depth	(1 – 127) –63 – +63
00 71	0000 000a	OSC 2 Tempo Sync Sw	(0 – 1) OFF, ON
00 72	0000 000a	OSC 2 Robot Voice Sw	(0 – 1) OFF, ON
00 73	0000 00aa	OSC 2 Playback Mode	(0 – 3) RETRIGGER, LEGATO, STEP, EVENT
00 74	0000 000a	OSC 2 Loop Sw	(0 – 1) OFF, ON
00 75	0000 000a	OSC 2 Vari Sw	(0 – 1) OFF, ON
00 76	0aaa aaaa	OSC 2 Energy	(0 – 127) OFF, 1 - 127
00 77	0000 000a	OSC 2 Time Trip Sw	(0 – 1) OFF, ON
00 78	0000 000a	OSC 2 Time Trip Beat Keep	(0 – 1) OFF, ON
00 00 00 79	Total Size		

❍Patch Envelope

Offset Address		Description	
# 00 00	0000 aaaa 0000 bbbb	Env 1 Attack Time	(0 – 144) 0 – 127, MUSICAL–NOTES
# 00 02	0000 aaaa 0000 bbbb	Env 1 Decay Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 04	0aaa aaaa	Env 1 Sustine	(0 – 127)
# 00 05	0000 aaaa 0000 bbbb	Env 1 Release Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 07	0000 0aaa	Env 1 Velocity Curve	(0 – 7) FIXED, 1 – 7
00 08	0aaa aaaa	Env 1 Velocity Sens	(1 – 127) –63 – +63
00 09	0aaa aaaa	Env 1 Attack Velocity Sens	(1 – 127) –63 – +63
00 0A	0aaa aaaa	Env 1 Decay Velocity Sens	(1 – 127) –63 – +63
00 0B	0aaa aaaa	Env 1 Release Velocity Sens	(1 – 127) –63 – +63
00 0C	00aa aaaa	Env 1 Time Keyfollow	(44 – 84) –200 – +200
# 00 0D	0000 aaaa 0000 bbbb	Env 2 Attack Time	(0 – 144) 0 – 127, MUSICAL–NOTES
# 00 0F	0000 aaaa 0000 bbbb	Env 2 Decay Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 11	0aaa aaaa	Env 2 Sustine	(0 – 127)
# 00 12	0000 aaaa 0000 bbbb	Env 2 Release Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 14	0000 0aaa	Env 2 Velocity Curve	(0 – 7) FIXED, 1 – 7
00 15	0aaa aaaa	Env 2 Velocity Sens	(1 – 127) –63 – +63
00 16	0aaa aaaa	Env 2 Attack Velocity Sens	(1 – 127) –63 – +63
00 17	0aaa aaaa	Env 2 Decay Velocity Sens	(1 – 127) –63 – +63
00 18	0aaa aaaa	Env 2 Release Velocity Sens	(1 – 127) –63 – +63
00 19	00aa aaaa	Env 2 Time Keyfollow	(44 – 84) –200 – +200
# 00 1A	0000 aaaa 0000 bbbb	Env 3 Attack Time	(0 – 144) 0 – 127, MUSICAL–NOTES
# 00 1C	0000 aaaa 0000 bbbb	Env 3 Decay Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 1E	0aaa aaaa	Env 3 Sustine	(0 – 127)
# 00 1F	0000 aaaa 0000 bbbb	Env 3 Release Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 21	0000 0aaa	Env 3 Velocity Curve	(0 – 7) FIXED, 1 – 7
00 22	0aaa aaaa	Env 3 Velocity Sens	(1 – 127) –63 – +63
00 23	0aaa aaaa	Env 3 Attack Velocity Sens	(1 – 127) –63 – +63
00 24	0aaa aaaa	Env 3 Decay Velocity Sens	(1 – 127) –63 – +63
00 25	0aaa aaaa	Env 3 Release Velocity Sens	(1 – 127) –63 – +63
00 26	00aa aaaa	Env 3 Time Keyfollow	(44 – 84) –200 – +200
# 00 27	0000 aaaa 0000 bbbb	Env 4 Attack Time	(0 – 144) 0 – 127, MUSICAL–NOTES
# 00 29	0000 aaaa 0000 bbbb	Env 4 Decay Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 2B	0aaa aaaa	Env 4 Sustine	(0 – 127)
# 00 2C	0000 aaaa 0000 bbbb	Env 4 Release Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 2E	0000 0aaa	Env 4 Velocity Curve	(0 – 7) FIXED, 1 – 7
00 2F	0aaa aaaa	Env 4 Velocity Sens	(1 – 127) –63 – +63
00 30	0aaa aaaa	Env 4 Attack Velocity Sens	(1 – 127) –63 – +63
00 31	0aaa aaaa	Env 4 Decay Velocity Sens	(1 – 127) –63 – +63
00 32	0aaa aaaa	Env 4 Release Velocity Sens	(1 – 127) –63 – +63
00 33	00aa aaaa	Env 4 Time Keyfollow	(44 – 84) –200 – +200
# 00 34	0000 aaaa 0000 bbbb	Env 5 Attack Time	(0 – 144) 0 – 127, MUSICAL–NOTES
# 00 36	0000 aaaa 0000 bbbb	Env 5 Decay Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 38	0aaa aaaa	Env 5 Sustine	(0 – 127)
# 00 39	0000 aaaa 0000 bbbb	Env 5 Release Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 3B	0000 0aaa	Env 5 Velocity Curve	(0 – 7) FIXED, 1 – 7
00 3C	0aaa aaaa	Env 5 Velocity Sens	(1 – 127) –63 – +63
00 3D	0aaa aaaa	Env 5 Attack Velocity Sens	(1 – 127) –63 – +63
00 3E	0aaa aaaa	Env 5 Decay Velocity Sens	(1 – 127) –63 – +63
00 3F	0aaa aaaa	Env 5 Release Velocity Sens	(1 – 127) –63 – +63
00 40	00aa aaaa	Env 5 Time Keyfollow	(44 – 84) –200 – +200
# 00 41	0000 aaaa 0000 bbbb	Env 6 Attack Time	(0 – 144) 0 – 127, MUSICAL–NOTES
# 00 43	0000 aaaa 0000 bbbb	Env 6 Decay Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 45	0aaa aaaa	Env 6 Sustine	(0 – 127)
# 00 46	0000 aaaa 0000 bbbb	Env 6 Release Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 48	0000 0aaa	Env 6 Velocity Curve	(0 – 7) FIXED, 1 – 7
00 49	0aaa aaaa	Env 6 Velocity Sens	(1 – 127) –63 – +63
00 4A	0aaa aaaa	Env 6 Attack Velocity Sens	(1 – 127) –63 – +63
00 4B	0aaa aaaa	Env 6 Decay Velocity Sens	(1 – 127) –63 – +63
00 4C	0aaa aaaa	Env 6 Release Velocity Sens	(1 – 127) –63 – +63
00 4D	00aa aaaa	Env 6 Time Keyfollow	(44 – 84) –200 – +200
# 00 4E	0000 aaaa 0000 bbbb	Env 7 Attack Time	(0 – 144) 0 – 127, MUSICAL–NOTES
# 00 50	0000 aaaa 0000 bbbb	Env 7 Decay Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 52	0aaa aaaa	Env 7 Sustine	(0 – 127)
# 00 53	0000 aaaa 0000 bbbb	Env 7 Release Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 55	0000 0aaa	Env 7 Velocity Curve	(0 – 7) FIXED, 1 – 7
00 56	0aaa aaaa	Env 7 Velocity Sens	(1 – 127) –63 – +63
00 57	0aaa aaaa	Env 7 Attack Velocity Sens	(1 – 127) –63 – +63
00 58	0aaa aaaa	Env 7 Decay Velocity Sens	(1 – 127) –63 – +63
00 59	0aaa aaaa	Env 7 Release Velocity Sens	(1 – 127) –63 – +63
00 5A	00aa aaaa	Env 7 Time Keyfollow	(44 – 84) –200 – +200
# 00 5B	0000 aaaa 0000 bbbb	Env 8 Attack Time	(0 – 144) 0 – 127, MUSICAL–NOTES
# 00 5D	0000 aaaa 0000 bbbb	Env 8 Decay Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 5F	0aaa aaaa	Env 8 Sustine	(0 – 127)
# 00 60	0000 aaaa 0000 bbbb	Env 8 Release Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 62	0000 0aaa	Env 8 Velocity Curve	(0 – 7) FIXED, 1 – 7
00 63	0aaa aaaa	Env 8 Velocity Sens	(1 – 127) –63 – +63
00 64	0aaa aaaa	Env 8 Attack Velocity Sens	(1 – 127) –63 – +63
00 65	0aaa aaaa	Env 8 Decay Velocity Sens	(1 – 127) –63 – +63
00 66	0aaa aaaa	Env 8 Release Velocity Sens	(1 – 127) –63 – +63
00 67	00aa aaaa	Env 8 Time Keyfollow	(44 – 84) –200 – +200
# 00 68	0000 aaaa 0000 bbbb	Env 9 Attack Time	(0 – 144) 0 – 127, MUSICAL–NOTES
# 00 6A	0000 aaaa 0000 bbbb	Env 9 Decay Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 6C	0aaa aaaa	Env 9 Sustine	(0 – 127)
# 00 6D	0000 aaaa 0000 bbbb	Env 9 Release Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 6F	0000 0aaa	Env 9 Velocity Curve	(0 – 7) FIXED, 1 – 7
00 70	0aaa aaaa	Env 9 Velocity Sens	(1 – 127) –63 – +63
00 71	0aaa aaaa	Env 9 Attack Velocity Sens	(1 – 127) –63 – +63
00 72	0aaa aaaa	Env 9 Decay Velocity Sens	(1 – 127) –63 – +63
00 73	0aaa aaaa	Env 9 Release Velocity Sens	(1 – 127) –63 – +63
00 74	00aa aaaa	Env 9 Time Keyfollow	(44 – 84) –200 – +200
# 00 75	0000 aaaa 0000 bbbb	Env 10 Attack Time	(0 – 144) 0 – 127, MUSICAL–NOTES
# 00 77	0000 aaaa 0000 bbbb	Env 10 Decay Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 79	0aaa aaaa	Env 10 Sustine	(0 – 127)
# 00 7A	0000 aaaa 0000 bbbb	Env 10 Release Time	(0 – 144) 0 – 127, MUSICAL–NOTES
00 7C	0000 0aaa	Env 10 Velocity Curve	(0 – 7) FIXED, 1 – 7
00 7D	0aaa aaaa	Env 10 Velocity Sens	(1 – 127) –63 – +63
00 7E	0aaa aaaa	Env 10 Attack Velocity Sens	(1 – 127) –63 – +63
00 7F	0aaa aaaa	Env 10 Decay Velocity Sens	(1 – 127) –63 – +63
01 00	0aaa aaaa	Env 10 Release Velocity Sens	(1 – 127)

			−63 – +63
	01 01	00aa aaaa	Env 10 Time Keyfollow (44 – 84) −200 – +200
#	01 02	0000 aaaa 0000 bbbb	Env 11 Attack Time (0 – 144) 0 – 127, MUSICAL–NOTES
#	01 04	0000 aaaa 0000 bbbb	Env 11 Decay Time (0 – 144) 0 – 127, MUSICAL–NOTES
	01 06	0aaa aaaa	Env 11 Sustine (0 – 127)
#	01 07	0000 aaaa 0000 bbbb	Env 11 Release Time (0 – 144) 0 – 127, MUSICAL–NOTES
	01 09	0000 0aaa	Env 11 Velocity Curve (0 – 7) FIXED, 1 – 7
	01 0A	0aaa aaaa	Env 11 Velocity Sens (1 – 127) −63 – +63
	01 0B	0aaa aaaa	Env 11 Attack Velocity Sens (1 – 127) −63 – +63
	01 0C	0aaa aaaa	Env 11 Decay Velocity Sens (1 – 127) −63 – +63
	01 0D	0aaa aaaa	Env 11 Release Velocity Sens (1 – 127) −63 – +63
	01 0E	00aa aaaa	Env 11 Time Keyfollow (44 – 84) −200 – +200
#	01 0F	0000 aaaa 0000 bbbb	Env 12 Attack Time (0 – 144) 0 – 127, MUSICAL–NOTES
#	01 11	0000 aaaa 0000 bbbb	Env 12 Decay Time (0 – 144) 0 – 127, MUSICAL–NOTES
	01 13	0aaa aaaa	Env 12 Sustine (0 – 127)
#	01 14	0000 aaaa 0000 bbbb	Env 12 Release Time (0 – 144) 0 – 127, MUSICAL–NOTES
	01 16	0000 0aaa	Env 12 Velocity Curve (0 – 7) FIXED, 1 – 7
	01 17	0aaa aaaa	Env 12 Velocity Sens (1 – 127) −63 – +63
	01 18	0aaa aaaa	Env 12 Attack Velocity Sens (1 – 127) −63 – +63
	01 19	0aaa aaaa	Env 12 Decay Velocity Sens (1 – 127) −63 – +63
	01 1A	0aaa aaaa	Env 12 Release Velocity Sens (1 – 127) −63 – +63
	01 1B	00aa aaaa	Env 12 Time Keyfollow (44 – 84) −200 – +200
#	01 1C	0000 aaaa 0000 bbbb	Env 13 Attack Time (0 – 144) 0 – 127, MUSICAL–NOTES
#	01 1E	0000 aaaa 0000 bbbb	Env 13 Decay Time (0 – 144) 0 – 127, MUSICAL–NOTES
	01 20	0aaa aaaa	Env 13 Sustine (0 – 127)
#	01 21	0000 aaaa 0000 bbbb	Env 13 Release Time (0 – 144) 0 – 127, MUSICAL–NOTES
	01 23	0000 0aaa	Env 13 Velocity Curve (0 – 7) FIXED, 1 – 7
	01 24	0aaa aaaa	Env 13 Velocity Sens (1 – 127) −63 – +63
	01 25	0aaa aaaa	Env 13 Attack Velocity Sens (1 – 127) −63 – +63
	01 26	0aaa aaaa	Env 13 Decay Velocity Sens (1 – 127) −63 – +63
	01 27	0aaa aaaa	Env 13 Release Velocity Sens (1 – 127) −63 – +63
	01 28	00aa aaaa	Env 13 Time Keyfollow (44 – 84) −200 – +200
	00 00 01 29	Total Size	

ENV 1	OSC1 Pitch
ENV 2	OSC1 Time/Pulse Width
ENV 3	OSC1 Formant/Fat
ENV 4	OSC1 Level
ENV 5	OSC2 Pitch
ENV 6	OSC2 Time/Pulse Width
ENV 7	OSC2 Formant/Fat
ENV 8	OSC2 Level
ENV 9	COSM1 Parameter 1
ENV 10	COSM1 Parameter 2
ENV 11	COSM2 Parameter 1
ENV 12	COSM2 Parameter 2
ENV 13	TVA Level

❍Patch LFO

Offset Address	Description	
00 00	0000 0aaa	LFO 1 Waveform (0 – 7) SIN, TRI, SAW, SQR, RND, TRP, S&H, CHS
# 00 01	0000 aaaa 0000 bbbb	LFO 1 Rate (0 – 144) 0 – 127, MUSICAL–NOTES
00 03	0000 0aaa	LFO 1 Offset (0 – 4) −100, −50, 0, +50, +100
00 04	0aaa aaaa	LFO 1 Delay Time (0 – 127)
00 05	0000 00aa	LFO 1 Fade Mode (0 – 3) ON–IN, ON–OUT, OFF–IN, OFF–OUT
00 06	0aaa aaaa	LFO 1 Fade Time (0 – 127)
00 07	0000 000a	LFO 1 Key Sync (0 – 1) OFF, ON
00 08	0000 0aaa	LFO 2 Waveform (0 – 7) SIN, TRI, SAW, SQR, RND, TRP, S&H, CHS
# 00 09	0000 aaaa 0000 bbbb	LFO 2 Rate (0 – 144) 0 – 127, MUSICAL–NOTES
00 0B	0000 0aaa	LFO 2 Offset (0 – 4) −100, −50, 0, +50, +100
00 0C	0aaa aaaa	LFO 2 Delay Time (0 – 127)
00 0D	0000 00aa	LFO 2 Fade Mode (0 – 3) ON–IN, ON–OUT, OFF–IN, OFF–OUT
00 0E	0aaa aaaa	LFO 2 Fade Time (0 – 127)
00 0F	0000 000a	LFO 2 Key Sync (0 – 1) OFF, ON
00 10	0000 0aaa	LFO 3 Waveform (0 – 7) SIN, TRI, SAW, SQR, RND, TRP, S&H, CHS
# 00 11	0000 aaaa 0000 bbbb	LFO 3 Rate (0 – 144) 0 – 127, MUSICAL–NOTES
00 13	0000 0aaa	LFO 3 Offset (0 – 4) −100, −50, 0, +50, +100
00 14	0aaa aaaa	LFO 3 Delay Time (0 – 127)
00 15	0000 00aa	LFO 3 Fade Mode (0 – 3) ON–IN, ON–OUT, OFF–IN, OFF–OUT
00 16	0aaa aaaa	LFO 3 Fade Time (0 – 127)
00 17	0000 000a	LFO 3 Key Sync (0 – 1) OFF, ON
00 18	0000 0aaa	LFO 4 Waveform (0 – 7) SIN, TRI, SAW, SQR, RND, TRP, S&H, CHS
# 00 19	0000 aaaa 0000 bbbb	LFO 4 Rate (0 – 144) 0 – 127, MUSICAL–NOTES
00 1B	0000 0aaa	LFO 4 Offset (0 – 4) −100, −50, 0, +50, +100
00 1C	0aaa aaaa	LFO 4 Delay Time (0 – 127)
00 1D	0000 00aa	LFO 4 Fade Mode (0 – 3) ON–IN, ON–OUT, OFF–IN, OFF–OUT
00 1E	0aaa aaaa	LFO 4 Fade Time (0 – 127)
00 1F	0000 000a	LFO 4 Key Sync (0 – 1) OFF, ON
00 20	0000 0aaa	LFO 5 Waveform (0 – 7) SIN, TRI, SAW, SQR, RND, TRP, S&H, CHS
# 00 21	0000 aaaa 0000 bbbb	LFO 5 Rate (0 – 144) 0 – 127, MUSICAL–NOTES
00 23	0000 0aaa	LFO 5 Offset (0 – 4) −100, −50, 0, +50, +100
00 24	0aaa aaaa	LFO 5 Delay Time (0 – 127)
00 25	0000 00aa	LFO 5 Fade Mode (0 – 3) ON–IN, ON–OUT, OFF–IN, OFF–OUT
00 26	0aaa aaaa	LFO 5 Fade Time (0 – 127)
00 27	0000 000a	LFO 5 Key Sync (0 – 1) OFF, ON
00 00 00 28	Total Size	

LFO 1	OSC1
LFO 2	OSC2
LFO 3	COSM1
LFO 4	COMS2
LFO 5	TVA

❍Patch COSM

Offset Address	Description	
00 00	0000 000a	COSM Switch (0 – 1) BYPASS, ON
00 01	0000 aaaa	COSM Type (0 – 15)
# 00 02	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 1 (12768 – 52768) −20000 – +20000
# 00 06	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 2 (12768 – 52768) −20000 – +20000
# 00 0A	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 3 (12768 – 52768) −20000 – +20000
# 00 0E	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 4 (12768 – 52768) −20000 – +20000
# 00 12	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 5 (12768 – 52768) −20000 – +20000
# 00 16	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 6 (12768 – 52768) −20000 – +20000
# 00 1A	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 7 (12768 – 52768) −20000 – +20000
# 00 1E	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 8 (12768 – 52768) −20000 – +20000
# 00 22	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 9 (12768 – 52768) −20000 – +20000
# 00 26	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 10 (12768 – 52768) −20000 – +20000
# 00 2A	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 11 (12768 – 52768) −20000 – +20000
# 00 2E	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 12 (12768 – 52768) −20000 – +20000
# 00 32	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 13 (12768 – 52768) −20000 – +20000
# 00 36	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 14 (12768 – 52768) −20000 – +20000
# 00 3A	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 15 (12768 – 52768) −20000 – +20000
# 00 3E	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 16 (12768 – 52768) −20000 – +20000
00 00 00 42	Total Size	

❍Patch Controller

Offset Address		Description	
00 00	0000 0aaa	Beam Type	(0 – 4) OFF, 1 – 4
00 01	0000 000a	Pad Mode	(0 – 1) X–Y, TIME–TRIP
00 02	0000 000a	Pad Hold	(0 – 1) OFF, ON
00 03	0000 000a	Arpeggio Switch	(0 – 1) OFF, ON
00 04	0000 000a	Arpeggio Hold	(0 – 1) OFF, ON
00 05	0aaa aaaa	Arpeggio Motif	(0 – 7) UP, DOWN, UP&DOWN, RANDOM, NOTE–ORDER, RHYTHM, PHRASE, AUTO
00 06	0aaa aaaa	Arpeggio Duration	(0 – 100)
00 07	0aaa aaaa	Arpeggio Shuffle Rate	(0 – 100)
00 08	0000 000a	Arpeggio Shuffle Resolution	(0 – 1) 16TH, 8TH
00 09	0aaa aaaa	Arpeggio Keyboard Velocity	(0 – 127) REAL, 1 – 127
00 0A	0000 0aaa	Arpeggio Octave Range	(61 – 67) –3 – +3
00 0B	0000 0aaa	Arpeggio Grid	(0 – 5) QUARTER, 8TH, 8TH–T, 16TH, 16TH–T, 32TH
00 0C	000a aaaa	Arpeggio End Point	(0 – 31) 1 – 32
00 00 00 0D	Total Size		

❍Patch Arpeggio

Offset Address		Description	
00 00	0000 000a	Control Switch	(0 – 1) NOTE, CTRL
00 01	0aaa aaaa	Control Number	(0 – 127)
# 00 02	0000 aaaa 0000 bbbb	Step 1 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 04	0000 aaaa 0000 bbbb	Step 2 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 06	0000 aaaa 0000 bbbb	Step 3 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 08	0000 aaaa 0000 bbbb	Step 4 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 0A	0000 aaaa 0000 bbbb	Step 5 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 0C	0000 aaaa 0000 bbbb	Step 6 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 0E	0000 aaaa 0000 bbbb	Step 7 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 10	0000 aaaa 0000 bbbb	Step 8 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 12	0000 aaaa 0000 bbbb	Step 9 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 14	0000 aaaa 0000 bbbb	Step 10 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 16	0000 aaaa 0000 bbbb	Step 11 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 18	0000 aaaa 0000 bbbb	Step 12 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 1A	0000 aaaa 0000 bbbb	Step 13 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 1C	0000 aaaa 0000 bbbb	Step 14 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 1E	0000 aaaa 0000 bbbb	Step 15 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 20	0000 aaaa 0000 bbbb	Step 16 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 22	0000 aaaa 0000 bbbb	Step 17 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 24	0000 aaaa 0000 bbbb	Step 18 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 26	0000 aaaa 0000 bbbb	Step 19 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 28	0000 aaaa 0000 bbbb	Step 20 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 2A	0000 aaaa 0000 bbbb	Step 21 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 2C	0000 aaaa 0000 bbbb	Step 22 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 2E	0000 aaaa 0000 bbbb	Step 23 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 30	0000 aaaa 0000 bbbb	Step 24 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 32	0000 aaaa 0000 bbbb	Step 25 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 34	0000 aaaa 0000 bbbb	Step 26 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 36	0000 aaaa 0000 bbbb	Step 27 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 38	0000 aaaa 0000 bbbb	Step 28 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 3A	0000 aaaa 0000 bbbb	Step 29 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 3C	0000 aaaa 0000 bbbb	Step 30 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 3E	0000 aaaa 0000 bbbb	Step 31 Velocity	(0 – 128) REST, 1 – 127, TIE
# 00 40	0000 aaaa 0000 bbbb	Step 32 Velocity	(0 – 128) REST, 1 – 127, TIE
00 00 00 42	Total Size		

4. Supplementary Material

■Decimal and Hexadecimal Table

(An "H" is appended to the end of numbers in hexadecimal notation.)
In MIDI documentation, data values and addresses/sizes of Exclusive messages, etc. are expressed as hexadecimal values for each 7 bits.
The following table shows how these correspond to decimal numbers.

D	H	D	H	D	H	D	H
0	00H	32	20H	64	40H	96	60H
1	01H	33	21H	65	41H	97	61H
2	02H	34	22H	66	42H	98	62H
3	03H	35	23H	67	43H	99	63H
4	04H	36	24H	68	44H	100	64H
5	05H	37	25H	69	45H	101	65H
6	06H	38	26H	70	46H	102	66H
7	07H	39	27H	71	47H	103	67H
8	08H	40	28H	72	48H	104	68H
9	09H	41	29H	73	49H	105	69H
10	0AH	42	2AH	74	4AH	106	6AH
11	0BH	43	2BH	75	4BH	107	6BH
12	0CH	44	2CH	76	4CH	108	6CH
13	0DH	45	2DH	77	4DH	109	6DH
14	0EH	46	2EH	78	4EH	110	6EH
15	0FH	47	2FH	79	4FH	111	6FH
16	10H	48	30H	80	50H	112	70H
17	11H	49	31H	81	51H	113	71H
18	12H	50	32H	82	52H	114	72H
19	13H	51	33H	83	53H	115	73H
20	14H	52	34H	84	54H	116	74H
21	15H	53	35H	85	55H	117	75H
22	16H	54	36H	86	56H	118	76H
23	17H	55	37H	87	57H	119	77H
24	18H	56	38H	88	58H	120	78H
25	19H	57	39H	89	59H	121	79H
26	1AH	58	3AH	90	5AH	122	7AH
27	1BH	59	3BH	91	5BH	123	7BH
28	1CH	60	3CH	92	5CH	124	7CH
29	1DH	61	3DH	93	5DH	125	7DH
30	1EH	62	3EH	94	5EH	126	7EH
31	1FH	63	3FH	95	5FH	127	7FH

D: decimal
H: hexadecimal

* Decimal values such as MIDI channel, bank select, and program change are listed as one greater than the values given in the above table.
* A 7-bit byte can express data in the range of 128 steps. For data where greater precision is required, we must use two or more bytes. For example, two hexadecimal numbers aa bbH expressing two 7-bit bytes would indicate a value of aa x 128+bb.
* In the case of values which have a +/- sign, 00H = -64, 40H = +/-0, and 7FH = +63, so that the decimal expression would be 64 less than the value given in the above chart. In the case of two types, 00 00H = -8192, 40 00H = +/-0, and 7F 7FH = +8191. For example, if aa bbH were expressed as decimal, this would be aa bbH - 40 00H = aa x 128+bb - 64 x 128.
* Data marked "Use nibbled data" is expressed in hexadecimal in 4-bit units. A value expressed as a 2-byte nibble 0a 0bH has the value of a x 16+b.

<Example1> What is the decimal expression of 5AH?

From the preceding table, 5AH = 90

<Example2> What is the decimal expression of the value 12 34H given as hexadecimal for each 7 bits?

From the preceding table, since 12H = 18 and 34H = 52
18 x 128+52 = 2356

<Example3> What is the decimal expression of the nibbled value 0A 03 09 0D?

From the preceding table, since 0AH = 10, 03H = 3, 09H = 9, 0DH = 13
((10 x 16+3) x 16+9) x 16+13 = 41885

<Example4> What is the nibbled expression of the decimal value 1258?

```
16 ) 1258
16 )   78 ...10
16 )    4 ...14
        0 ... 4
```

Since from the preceding table, 0 = 00H, 4 = 04H, 14 = 0EH, 10 = 0AH, the result is: 00 04 0E 0AH.

■Examples of Actual MIDI Messages

<Example1> 92 3E 5F

9n is the Note-on status, and n is the MIDI channel number. Since 2H = 2, 3EH = 62, and 5FH = 95, this is a Note-on message with MIDI CH = 3, note number 62 (note name is D4), and velocity 95.

<Example2> CE 49

CnH is the Program Change status, and n is the MIDI channel number. Since EH = 14 and 49H = 73, this is a Program Change message with MIDI CH = 15, program number 74.

<Example3> EA 00 28

EnH is the Pitch Bend Change status, and n is the MIDI channel number. The 2nd byte (00H = 0) is the LSB and the 3rd byte (28H = 40) is the MSB, but Pitch Bend Value is a signed number in which 40 00H (= 64 x 12+80 = 8192) is 0, so this Pitch Bend Value is
28 00H - 40 00H = 40 x 12+80 - (64 x 12+80) = 5120 - 8192 = -3072

If the Pitch Bend Sensitivity is set to 2 semitones, -8192 (00 00H) will cause the pitch to change -200 cents, so in this case -200 x (-3072) ÷ (-8192) = -75 cents of Pitch Bend is being applied to MIDI channel 11.

<Example4> B3 64 00 65 00 06 0C 26 00 64 7F 65 7F

BnH is the Control Change status, and n is the MIDI channel number. For Control Changes, the 2nd byte is the control number, and the 3rd byte is the value. In a case in which two or more messages consecutive messages have the same status, MIDI has a provision called "running status" which allows the status byte of the second and following messages to be omitted. Thus, the above messages have the following meaning.

B3	64 00	MIDI ch.4, lower byte of RPN parameter number:	00H
(B3)	65 00	(MIDI ch.4) upper byte of RPN parameter number:	00H
(B3)	06 0C	(MIDI ch.4) upper byte of parameter value:	0CH
(B3)	26 00	(MIDI ch.4) lower byte of parameter value:	00H
(B3)	64 7F	(MIDI ch.4) lower byte of RPN parameter number:	7FH
(B3)	65 7F	(MIDI ch.4) upper byte of RPN parameter number:	7FH

In other words, the above messages specify a value of 0C 00H for RPN parameter number 00 00H on MIDI channel 4, and then set the RPN parameter number to 7F 7FH.

RPN parameter number 00 00H is Pitch Bend Sensitivity, and the MSB of the value indicates semitone units, so a value of 0CH = 12 sets the maximum pitch bend range to +/-12 semitones (1 octave). (On GS sound generators the LSB of Pitch Bend Sensitivity is ignored, but the LSB should be transmitted anyway (with a value of 0) so that operation will be correct on any device.)

Once the parameter number has been specified for RPN or NRPN, all Data Entry messages transmitted on that same channel will be valid, so after the desired value has been transmitted, it is a good idea to set the parameter number to 7F 7FH to prevent accidents. This is the reason for the (B3) 64 7F (B3) 65 7F at the end.

It is not desirable for performance data (such as Standard MIDI File data) to contain many events with running status as given in <Example 4>. This is because if playback is halted during the song and then rewound or fast-forwarded, the sequencer may not be able to transmit the correct status, and the sound generator will then misinterpret the data. Take care to give each event its own status.

It is also necessary that the RPN or NRPN parameter number setting and the value setting be done in the proper order. On some sequencers, events occurring in the same (or consecutive) clock may be transmitted in an order different than the order in which they were received. For this reason it is a good idea to slightly skew the time of each event (about 1 tick for TPQN = 96, and about 5 ticks for TPQN = 480).

* TPQN: Ticks Per Quarter Note

■Example of an Exclusive Message and Calculating a Checksum

Roland Exclusive messages (RQ1, DT1) are transmitted with a checksum at the end (before F7) to make sure that the message was correctly received. The value of the checksum is determined by the address and data (or size) of the transmitted Exclusive message.

●How to Calculate the Checksum

(hexadecimal numbers are indicated by "H")
The checksum is a value derived by adding the address, size, and checksum itself and inverting the lower 7 bits.
Here's an example of how the checksum is calculated. We will assume that in the Exclusive message we are transmitting, the address is aa bb cc ddH and the data or size is ee ffH.

aa + bb + cc + dd + ee + ff = sum
sum ÷ 128 = quotient ... remainder
128 - remainder = checksum

<Example1> Setting CHORUS TYPE of PATCH to CHORUS 1 (DT1)

According to the **"Parameter Address Map"** (p. 159), the start address of Temporary Patch is 10 00 00 00H, the offset address of PATCH CHORUS at PATCH is 04 00H, and the address of CHORUS TYPE is 00 00H. Therefore the address of CHORUS TYPE of PATCH CHORUS is;

```
   10 00 00 00H
         04 00H
+)       00 00H
   10 00 04 00H
```

CHORUS 1 has the value of 01H.
So the system exclusive message should be sent is;

F0	41	10	00 53	12	10 00 04 00	01	??	F7
(1)	(2)	(3)	(4)	(5)	address	data	checksum	(6)

(1) Exclusive Status (2) ID (Roland) (3) Device ID (17)
(4) Model ID (V-Synth) (5) Command ID (DT1) (6) End of Exclusive

Then calculate the checksum.

10H + 00H + 04H + 00H + 01H = 16 + 0 + 4 + 0 + 1 = 21 (sum)
21 (sum) ÷ 128 = 0 (quotient) ... 21 (remainder)
checksum = 128 - 21 (remainder) = 107 = 6BH

This means that F0 41 10 00 53 12 10 00 04 00 01 6B F7 is the message should be sent.

<Example2> Getting the data (RQ1) of PATCH MFX in PATCH:003

According to the **"Parameter Address Map"** (p. 159), the start address of PATCH:003 is 20 02 00 00H, and the offset address of PATCH MFX is 00 02 00H.
Therefore the start address of PATCH MFX in PATCH:003 is;

```
   20 02 00 00H
+)    00 02 00H
   20 02 02 00H
```

As the size of PATCH MFX is 00 00 01 04H, the system exclusive message should be sent is;

F0	41	10	00 53	11	20 02 02 00	00 00 01 04	??	F7
(1)	(2)	(3)	(4)	(5)	address	data	checksum	(6)

(1) Exclusive Status (2) ID (Roland) (3) Device ID (17)
(4) Model ID (V-Synth) (5) Command ID (RQ1) (6) End of Exclusive

Then calculate the checksum.

20H + 02H + 02H + 00H + 00H + 00H + 01H + 04H = 32 + 2 + 2 + 0 + 0 + 0 + 1 + 4
= 41 (sum)
117 (sum) ÷ 128 = 0 (quotient) ... 41 (remainder)
checksum = 128 - 41 (remainder) = 87 = 57H

This means that F0 41 10 00 53 11 20 02 02 00 00 00 01 04 57 F7 is the message should be sent.

<Example3> Getting Temporary Patch (Part 1) data (RQ1)

cf.) This operation is the same as Data Transfer function in Utility mode with "PATCH: TEMP" (Source parameter) options.

According to the **"Parameter Address Map"** (p. 159), the start address of Temporary Patch (Part 1) is assigned as following:

10 00 00 00	Temporary Patch (Part 1)

The offset address of Patch is also assigned as follows:

00 00 00	Patch Common
:	
00 10 00	Patch Oscillator (Zone 1)
:	
00 20 00	Patch Envelope (Zone 1)
:	
00 40 00	Patch LFO (Zone 1)
:	
00 50 00	Patch COSM1 (Zone 1)
:	
00 60 00	Patch COSM2 (Zone 1)
:	
00 70 00	Patch Arpeggio (Note 1)
:	
00 7F 00	Patch Arpeggio (Note 16)

As the data size of Patch Arpeggio is 00 00 00 42H, summation of the size and the start address of Temporary Patch Arpeggio (Note 16) will be;

```
   10 00 00 00H
   00 00 7F 00H
+) 00 00 00 42H
   10 00 7F 42H
```

And the size that have to be got should be;

```
   10 00 7F 42H
-) 10 00 00 00H
   00 00 7F 42H
```

Therefore the system exclusive message should be sent is;

F0	41	10	00 53	11	10 00 00 00	00 00 7F 42	??	F7
(1)	(2)	(3)	(4)	(5)	address	data	checksum	(6)

(1) Exclusive Status (2) ID (Roland) (3) Device ID (17)
(4) Model ID (V-Synth) (5) Command ID (RQ1) (6) End of Exclusive

Calculating the checksum as shown in <Example 2>, we get a message of F0 41 10 00 53 11 10 00 00 00 00 00 7F 42 2F F7 to be transmitted.

<Example4> Getting Temporary Patch data of whiole part (RQ1) at once;

According to the **"Parameter Address Map"** (p. 159), the start address of Temporary Patch of whole part is assigned as following:

10 00 00 00	Temporary Patch (Part 1)
10 01 00 00	Temporary Patch (Part 2)
:	
10 0F 00 00	Temporary Patch (Part 16)

The offset address of Patch is also assigned as follows:

00 00 00	Patch Common
:	
00 10 00	Patch Oscillator (Zone 1)
:	
00 20 00	Patch Envelope (Zone 1)
:	
00 40 00	Patch LFO (Zone 1)
:	
00 50 00	Patch COSM1 (Zone 1)
:	
00 60 00	Patch COSM2 (Zone 1)
:	
00 70 00	Patch Arpeggio (Note 1)
:	
00 7F 00	Patch Arpeggio (Note 16)

As the data size of Patch Arpeggio is 00 00 00 42H, summation of the size and the start address of Temporary Patch (Port 16) Arpeggio (Note 16) will be;

```
   10 0F 00 00H
   00 00 7F 00H
+) 00 00 00 42H
   10 0F 7F 42H
```

And the size that have to be got should be;

```
   10 0F 7F 42H
-) 10 00 00 00H
   00 0F 7F 42H
```

Therefore the system exclusive message should be sent is;

F0	41	10	00 53	11	10 00 00 00	00 0F 7F 42	??	F7
(1)	(2)	(3)	(4)	(5)	address	data	checksum	(6)

(1) Exclusive Status (2) ID (Roland) (3) Device ID (17)
(4) Model ID (V-Synth) (5) Command ID (RQ1) (6) End of Exclusive

Calculating the checksum as shown in <Example 2>, we get a message of F0 41 10 00 53 11 10 00 00 00 00 0F 7F 42 20 F7 to be transmitted.

■The Scale Tune Feature (address: 40 1x 40)

The scale Tune feature allows you to finely adjust the individual pitch of the notes from C through B. Though the settings are made while working with one octave, the fine adjustments will affect all octaves. By making the appropriate Scale Tune settings, you can obtain a complete variety of tuning methods other than equal temperament. As examples, three possible types of scale setting are explained below.

❍Equal Temperament

This method of tuning divides the octave into 12 equal parts. It is currently the most widely used form of tuning, especially in occidental music. On the V-Synth, the default settings for the Scale Tune feature produce equal temperament.

❍Just Temperament (Tonic of C)

The principal triads resound much more beautifully than with equal temperament, but this benefit can only be obtained in one key. If transposed, the chords tend to become ambiguous. The example given involves settings for a key in which C is the keynote.

❍Arabian Scale

By altering the setting for Scale Tune, you can obtain a variety of other tunings suited for ethnic music. For example, the settings introduced below will set the unit to use the Arabian Scale.

Example Settings

Note name	Equal Temperament	Just Temperament (Key-tone C)	Arabian Scale
C	0	0	-6
C#	0	-8	+45
D	0	+4	-2
Eb	0	+16	-12
E	0	-14	-51
F	0	-2	-8
F#	0	-10	+43
G	0	+2	-4
G#	0	+14	+47
A	0	-16	0
Bb	0	+14	-10
B	0	-12	-49

The values in the table are given in cents. Convert these values to hexadecimal, and transmit them as Exclusive data.
For example, to set the tune (C-B) of the Part 1 Arabian Scale, send the following data:

F0 41 10 42 12 40 11 40 3A 6D 3E 34 0D 38 6B 3C 6F 40 36 0F 76 F7

■ASCII Code Table

Patch Name and Performance Name, etc., of MIDI data are described the ASCII code in the table below.

D	H	Char	D	H	Char	D	H	Char
32	20H	SP	64	40H	@	96	60H	`
33	21H	!	65	41H	A	97	61H	a
34	22H	"	66	42H	B	98	62H	b
35	23H	#	67	43H	C	99	63H	c
36	24H	$	68	44H	D	100	64H	d
37	25H	%	69	45H	E	101	65H	e
38	26H	&	70	46H	F	102	66H	f
39	27H	`	71	47H	G	103	67H	g
40	28H	(	72	48H	H	104	68H	h
41	29H	)	73	49H	I	105	69H	i
42	2AH	*	74	4AH	J	106	6AH	j
43	2BH	+	75	4BH	K	107	6BH	k
44	2CH	,	76	4CH	L	108	6CH	l
45	2DH	–	77	4DH	M	109	6DH	m
46	2EH	.	78	4EH	N	110	6EH	n
47	2FH	/	79	4FH	O	111	6FH	o
48	30H	0	80	50H	P	112	70H	p
49	31H	1	81	51H	Q	113	71H	q
50	32H	2	82	52H	R	114	72H	r
51	33H	3	83	53H	S	115	73H	s
52	34H	4	84	54H	T	116	74H	t
53	35H	5	85	55H	U	117	75H	u
54	36H	6	86	56H	V	118	76H	v
55	37H	7	87	57H	W	119	77H	w
56	38H	8	88	58H	X	120	78H	x
57	39H	9	89	59H	Y	121	79H	y
58	3AH	:	90	5AH	Z	122	7AH	z
59	3BH	;	91	5BH	[	123	7BH	{
60	3CH	<	92	5CH	\	124	7CH	|
61	3DH	=	93	5DH	]	125	7DH	}
62	3EH	>	94	5EH	^			
63	3FH	?	95	5FH	_			

D: decimal
H: hexadecimal

* "SP" is space.

Synthesizer Keyboard
Model V-Synth

MIDI Implementation Chart

Date: Nov. 20, 2002
Version: 1.00

Function...		Transmitted	Recognized	Remarks
Basic	Default	1–16	1–16	
Channel	Changed	1–16	1–16	Memorized
Mode	Default	Mode 3	Mode 3	
	Messages	Mono, Poly	Mode 3, 4 (M = 1)	* 2
	Altered	**********		
Note Number :	True Voice	0–127 **********	0–127 0–127	
Velocity	Note On	O	O	
	Note Off	O	O	
After Touch	Key's	X	O *1	
	Channel's	O	O *1	
Pitch Bend		O	O *1	
Control Change	0, 32	O *1	O *1	Bank select
	1	O (Modulation)	X *1	Modulation
	2	O (Knob 1) *1	X *1	Breath type
	5	X *1	O	Portamento time
	6, 38	X *1	O	Data entry
	7	O (Pedal 1) *1	O	Volume
	10	X	O	Panpot
	11	O (Pedal 2) *1	O	Expression
	16	O (D Beam1-L) *1	X *1	General purpose controller 1
	17	O (D Beam2-L) *1	X *1	General purpose controller 2
	18	O (D Beam3-L) *1	X *1	General purpose controller 3
	19	O (D Beam4-L) *1	X *1	General purpose controller 4
	34	O (Knob 2) *1	X *1	Breath type
	48	O (D Beam1-R) *1	X *1	General purpose controller 1
	49	O (D Beam2-R) *1	X *1	General purpose controller 2
	50	O (D Beam3-R) *1	X *1	General purpose controller 3
	51	O (D Beam4-R) *1	X *1	General purpose controller 4
	64	O (Hold)	O	Hold 1
	65	X *1	O	Portamento
	66	X *1	O	Sostenuto
	80	O (TT Pad XY-X) *1	X *1	General purpose controller 5
	81	O (TT Pad XY-Y) *1	X *1	General purpose controller 6
	82	O (TT Pad TT-X) *1	X *1	General purpose controller 7
	83	O (TT Pad TT-Y) *1	X *1	General purpose controller 8
	91	X *1	O (Reverb)	General purpose effects 1
	93	X *1	O (Chorus)	General purpose effects 3
	1–31, 64–95	O *1	X *1	Pedal, Knob, D Beam, TT Pad
	100, 101	X *1	O	RPN LSB, MSB
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System Exclusive		O *3	O *1	
System Common	: Song Position	X	X	
	: Song Select	X	X	
	: Tune Request	X	X	
System Realtime	: Clock	X *1	X *1	
	: Commands	X	X	
Aux Messages	: All Sound Off	X	O	
	: Reset All Controllers	X	O	
	: Local On/Off	X	X	
	: All Notes Off	X	O (123–127)	
	: Active Sensing	O *1	O	
	: System Reset	X	X	
Notes		* 1 O X is selectable. * 2 Recognized as M=1 even if M≠1. * 3 Transmits when Data Transfer is executed or RQ1 received.		

Mode 1 : OMNI ON, POLY
Mode 2 : OMNI ON, MONO
Mode 3 : OMNI OFF, POLY
Mode 4 : OMNI OFF, MONO

O : Yes
X : No

Specifications

V-Synth: Synthesizer Keyboard

● Keyboard
61 keys (with velocity and channel aftertouch)

● Sound Generator Configuration
Oscillator (envelope x 4 + LFO x 1) x 2
Modulator x 1
OSM (envelope x 2 + LFO x 1) x 2
TVA (envelope x 1 + LFO x 1) x 1

● Methods by Which Oscillators Produce Sound
Analog Modeling, PCM / VariPhrase (Preset waveforms + Sampling waveforms), External Input

● Modulator
4 types + MIX

● COSM
15 types + THRU

● Zones (Splits)
16

● Parts
16

● Maximum Polyphony
24 voices
(Varies depending on the load placed on the sound generator.)

● Internal Memory
Project: 1
Patches: 512
Waves: 999
Wave memory (RAM): 50 M bytes
(When the unit ships from the factory, 30 M bytes of this is taken up by the preset waves.)
Sample storage memory (FLASH): 10 M bytes

● External Storage Device
PC CARD slot
(Can be used Microdrive, SmartMedia or CompactFlash with PC card adapter.)

● Effects
MFX (Multi-effects): 41 sets
Chorus: 8 sets
Reverb: 10 sets

● System EQ
4 bands

● Sampling Frequency
Internal: 44.1 kHz
Digital Audio IN / OUT: 96, 48, 44.1 kHz

● Signal Processing
Internal processing
  Sound generating section: 32 bits (floating point)
  Effects section: 24 bits (fixed point)
DA Conversion: 24 bits
AD Conversion: 24 bits

● Nominal Output Level
MAIN OUT: +4 dBu
DIRECT OUT: +4 dBu

● Nominal Input Level
INPUT (LINE): -20 dBu
INPUT (MIC): -46 dBu

● Arpeggiator
Patterns: User programmable (support use of control change messages)
Motifs: 8 types
Tempo: 20 to 250 BPM

● Display
Graphic 320 x 240 dot backlit LCD with touch screen

● Controllers
Pitch Bend / Modulation Lever

Time Trip Pad
D Beam Controller (Twin beam)
Assignable Control Knobs (C1, C2)

● Connectors
Headphones Jack
Main Output Jacks (L / MONO, R) (1 / 4 inch phone type)
Direct Output Jacks (L, R) (1 / 4 inch phone type)
Input Jacks (L, R) (1 / 4 inch phone type, Equipped with line / mic gain switch)
Hold Pedal Jack
Control Pedal Jacks (1, 2) (assignable)
MIDI Connectors (IN, OUT, THRU)
USB Connector
Digital Audio Interface (24 bits, S / P DIF)
  COAXIAL (IN, OUT)
  OPTICAL (IN, OUT)
AC Inlet

● Power Supply
AC 117 V, AC 230 V, AC 240 V

● Power Consumption
16 W

● Dimensions
1,056 (W) x 398 (D) x 111 (H) mm
41-5 / 8 (W) x 15-11 / 16 (D) x 4-3 / 8 (H) inches

● Weight
13.1 kg / 28 lbs 15 oz

● Accessories
Quick Start
Owner's Manual
Sound List
CD-ROM (Driver)
PC CARD Protector
Power Cable

● Options
Keyboard Stand: KS-12
Pedal Switch: DP-2 / 6 / 8
Foot Switch: BOSS FS-5U, BOSS FV-300L
Expression Pedal: EV-5
Microphone: DR-20

(0 dBu = 0.775 V rms)

* *In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.*

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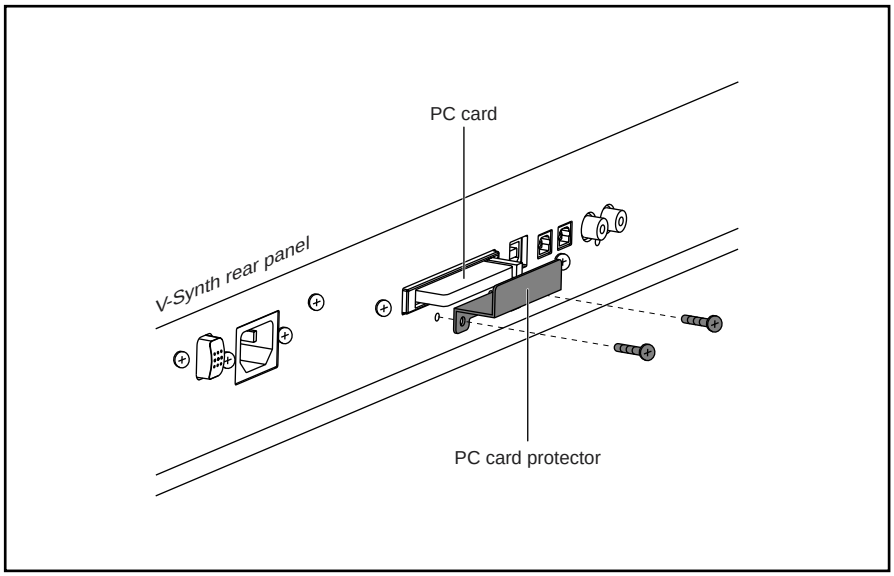
Installing the PC Card Protector

The V-Synth provides a PC card protector to prevent theft of the PC card. To install the PC card protector, use the following procedure.

1. **Use a screwdriver to remove both of the screws from the bottom side of the PC CARD slot.**
2. **Insert the PC card into the PC CARD card slot.**
3. **Use the screws to fasten the PC card protector as shown below.**



For EU Countries

CE

This product complies with the requirements of European Directives EMC 89/336/EEC and LVD 73/23/EEC.

For the USA

FEDERAL COMMUNICATIONS COMMISSION
RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

Unauthorized changes or modification to this system can void the users authority to operate this equipment.
This equipment requires shielded interface cables in order to meet FCC class B Limit.

For Canada

NOTICE

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

AVIS

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Information

When you need repair service, call your nearest Roland Service Center or authorized Roland distributor in your country as shown below.

AFRICA

EGYPT
Al Fanny Trading Office
9, EBN Hagar A1 Askalany Street,
ARD E1 Golf, Heliopolis,
Cairo 11341, EGYPT
TEL: 20-2-417-1828

REUNION
Maison FO - YAM Marcel
25 Rue Jules Hermann,
Chaudron - BP79 97 491
Ste Clotilde Cedex,
REUNION ISLAND
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SOUTH AFRICA
That Other Music Shop (PTY) Ltd.
11 Melle St., Braamfontein,
Johannesbourg, SOUTH AFRICA

P.O.Box 32918, Braamfontein 2017
Johannesbourg, SOUTH AFRICA
TEL: (011) 403 4105

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17 Werdmuller Centre,
Main Road, Claremont 7708
SOUTH AFRICA

P.O.BOX 23032, Claremont 7735,
SOUTH AFRICA
TEL: (021) 674 4030

ASIA

CHINA
Roland Shanghai Electronics Co.,Ltd.
5F. No.1500 Pingliang Road
Shanghai, CHINA
TEL: (021) 5580-0800

Roland Shanghai Electronics Co.,Ltd.
(BEIJING OFFICE)
10F. No.18 Anhuaxili
Chaoyang District, Beijing,
CHINA
TEL: (010) 6426-5050

HONG KONG
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Service Division
22-32 Pun Shan Street, Tsuen
Wan, New Territories,
HONG KONG
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PT Citra IntiRama
J1. Cideng Timur No. 15J-150
Jakarta Pusat
INDONESIA
TEL: (021) 6324170

KOREA
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1461-9, Seocho-Dong,
Seocho Ku, Seoul, KOREA
TEL: (02) 3486-8855

MALAYSIA
BENTLEY MUSIC SDN BHD
140 & 142, Jalan Bukit Bintang
55100 Kuala Lumpur, MALAYSIA
TEL: (03) 2144-3333

PHILIPPINES
G.A. Yupangco & Co. Inc.
339 Gil J. Puyat Avenue
Makati, Metro Manila 1200,
PHILIPPINES
TEL: (02) 899 9801

SINGAPORE
Swee Lee Company
150 Sims Drive,
SINGAPORE 387381
TEL: 6846-3676

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#02-2148, SINGAPORE 489980
TEL: 6243-9555

TAIWAN
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N.Road Sec.2, Taipei, TAIWAN,
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TEL: (02) 2561 3339

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330 Verng NakornKasem, Soi 2,
Bangkok 10100, THAILAND
TEL: (02) 2248821

VIETNAM
Saigon Music
138 Tran Quang Khai St.,
District 1
Ho Chi Minh City
VIETNAM
TEL: (08) 844-4068

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Roland Corporation Australia Pty., Ltd.
38 Campbell Avenue
Dee Why West. NSW 2099
AUSTRALIA
TEL: (02) 9982 8266

NEW ZEALAND
Roland Corporation Ltd.
32 Shaddock Street, Mount Eden,
Auckland, NEW ZEALAND
TEL: (09) 3098 715

CENTRAL / LATIN AMERICA

ARGENTINA
Instrumentos Musicales S.A.
Av.Santa Fe 2055
(1123) Buenos Aires
ARGENTINA
TEL: (011) 4508-2700

BRAZIL
Roland Brasil Ltda
Rua San Jose, 780 Sala B
Parque Industrial San Jose
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JUAN Bansbach Instrumentos Musicales
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San Jose, COSTA RICA
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Nataniel Cox #739, 4th Floor
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EL SALVADOR
OMNI MUSIC
75 Avenida Norte y Final
Alameda Juan Pablo II,
Edificio No.4010 San Salvador,
EL SALVADOR
TEL: 262-0788

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Casa Veerkamp, s.a. de c.v.
Av. Toluca No. 323, Col. Olivar
de los Padres 01780 Mexico D.F.
MEXICO
TEL: (55) 5668-6699

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Boulevard Andrews, Albrook,
Panama City, REP. DE PANAMA
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Distribuidora De Instrumentos Musicales
J.E. Olear y ESQ. Manduvira
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TEL: (021) 492-124

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Nordhavnsvej 7, Postbox 880,
DK-2100 Copenhagen
DENMARK
TEL: 3916 6200

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4, Rue Paul Henri SPAAK,
Parc de l'Esplanade, F 77 462 St.
Thibault, Lagny Cedex FRANCE
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H-2046 Torokbalint, HUNGARY
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IRELAND
Roland Ireland
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Republic of IRELAND
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Viale delle Industrie 8,
20020 Arese, Milano, ITALY
TEL: (02) 937-78300

NORWAY
Roland Scandinavia Avd. Kontor Norge
Lilleakerveien 2 Postboks 95
Lilleaker N-0216 Oslo
NORWAY
TEL: 2273 0074

POLAND
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PL-03664 Warszawa POLAND
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RO-4200 Gheorghehi
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SWITZERLAND
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Landstrasse 5, Postfach,
CH-4452 Itingen,
SWITZERLAND
TEL: (061) 927-8383

UKRAINE
TIC-TAC
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P.O. Box 180
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P.O.Box 2154, Alkhobar 31952
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Taksim - Istanbul, TURKEY
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Zabeel Road, Al Sherooq Bldg.,
No. 14, Grand Floor, Dubai, U.A.E.
TEL: (04) 3360715

NORTH AMERICA

CANADA
Roland Canada Music Ltd. (Head Office)
5480 Parkwood Way Richmond
B. C., V6V 2M4 CANADA
TEL: (604) 270 6626

Roland Canada Music Ltd. (Toronto Office)
170 Admiral Boulevard
Mississauga On L5T 2N6
CANADA
TEL: (905) 362 9707

U. S. A.
Roland Corporation U.S.
5100 S. Eastern Avenue
Los Angeles, CA 90040-2938,
U. S. A.
TEL: (323) 890 3700

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